NASA Contractor Report 178416, Part 1

SPACE SHUTTLE PHASE B WIND TUNNEL MODEL AND TEST INFORMATION

VOLUME 3 - LAUNCH CONFIGURATION

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PHASE B WIND TUNNEL MCDEL AND TEST
PHASE B WIND TUNNEL MCDEL AND TEST
OF CONFIGURATION UNCLASS INFORMATION CSCL 01A
(Chrysler Corp.) 444 F G3/02 0168487



National Aeronautics and Space Administration

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ABSTRACT

Archived wind tunnel test data are available for flyback booster or other alternate recoverable configurations as well as reusable orbiters studied during initial development (Phase B) of the Space Shuttle. Considerable wind tunnel data was acquired by the competing contractors and the NASA centers for an extensive variety of configurations with an array of wing and body planforms.

All contractor and NASA wind tunnel test data acquired in the Phase B development have been compiled into a database and are available for applying to current winged flyback or recoverable booster aerodynamic studies.

The Space Shuttle Phase B Wind Tunnel Database is structured by vehicle component and configuration type. Basic components include the booster, the orbiter and the launch vehicle.

Booster configuration types include straight and delta wings, canard, cylindrical, retro-glide and twin body.

Orbiter configuration types include straight and delta wings, lifting body, drop tanks and double delta wings.

Launch configuration types include booster and orbiter components in various stacked and tandum combinations.

The digital database consists of 220 files of data containing basic tunnel recorded data. Database structure is documented in a series of reports which include configuration sketches for the various planforms tested.

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LAUNCH AERODYNAMICS

						====		
BOOSTER	BOOSTER	ORBITER		TYPE	CHRYSLER			T PACE
CONFIG.	CONTRACTOR		CONTRACTO	R TEST	REPORT	VUL.	i mix	I PHUE
CODE		CODE			DMS-DR #			
B1	MDAC					=====	====:	=====
B1	MDAC	02	MDAC	FORCE	1065	3	1	96
B1	MDAC	02	MDAC	FORCE	1108	3	1	118
B1	MDAC/MMC	02	MDAC	FORCE	1118	3	1	174
Bi	MDAC/MMC	02 02	MDAC	FORCE	1117	3	1	192
B1	TBC	02	MDAC	FORCE	1190	3	1	217
B1	MDAC	03	GAC MDAC	FORCE	1148	3	1	225
B1	MDAC	0.3	MDAC	FORCE	1065	3	1	96
B1	MDAC	04	MDAC	FORCE	1099	3	1	238
B 2	GD/C	02	MSC	FORCE FORCE	1166	3	1	251
82	GD/C	02	MSC	FORCE	1204	3	1	256
B2	MDAC	02	MSC	FORCE	1210	3	1	271
B2	MSFC	02	LMSC	FORCE	1230	3	1	285
B2	MSFC	02	LMSC	FORCE	1256	3	1	340
B 2	MSFC	02	MSC	FORCE	1272 1241	3 3	1	351
B2	MSFC	02	MSC	FORCE	1249	3 3	1	362 370
B2	MSFC	02	MSC	FORCE	1251	3	1	372
B2	MSFC	02	MSC	FORCE	1265	3	1	38 3
B 2	MSFC	02	MSC	FORCE	1267	3	1	391 395
B2	NF:	02	NR	FORCE	1185	3	1	373 414
B2	TBC	02	MSC	FORCE	1227	3	1	427
B2	MSFC	04	GAC	FORCE	1181	3	1	436
B₹	GD/C	02	NR	FORCE	1052	3	2	440
B 3	GD/C	02	NR	FORCE	1127	3	2	453
B3	GD/C	02	NR	FORCE	1130	3	2	463
B3	GD/C	02	NF:	FORCE	1190	3	2	217
B3	GD/C	02	NR	FORCE	1237	3	2	480
B 3	MMC	02	MSC	FORCE	1213	3	2	485
8 3	MSC	02	MSC	FORCE	1115	3	2	495
B3	MSC/MDAC	02	MSC/MDAC	FORCE	1038	3	2	513
B 3	TBC	02	MSC	FORCE	1183	3	2	524
B3 B3	GD/C	03	NR	FORCE	1052	3	2	440
83	MDAC	03	MSC	FORCE	1047	3	2	544
83	MDAC	03	MSC	FORCE	1061	3	2	549
B 3	MSC	03	MSC	FORCE	1058	3	2	554
B3	MSC/MDAC GD/C	03	MSC/MDAC	FORCE	1038	3	2	513
B 3	GD/C	04	NR	FORCE	1119	3	2	572
B 3	TBC	04	NR	FORCE	1162	3	2	584
B4	GD/C	04	MSC	FORCE	1183	3	2	524
B4	GD/C	02 02	NR NB	FORCE	1050	3	2	595
B4	GD/C	02 02	NR	FORCE	1051	3		601
B4	GD/C	02	NR NE	FORCE	1052	3		440
B4	MSC/MDAC			FORCE	1075	3		625
B4	GD/C	02		FORCE	1038	3		513
B4	GD/C	02		FORCE	1050	3		595
		<u> </u>	NR	FORCE	1051	3	2	601

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LAUNCH AERODYNAMICS

========		=======		======:		=====		====
BOOSTER CONFIG. CODE	BOOSTER CONTRACTOR	ORBITER CONFIG. CODE	ORBITER CONTRACTOR	TYPE TEST	CHRYSLER REPORT DMS-DR #	VOL.	PART	PAGE
B4	GD/C	03	ND ND			*		
B4			NR	FORCE	1075	3	2	625
	MSC	03	MSC	FORCE	1042	3	2	6 33
B4	MSC	03	MSC	FORCE	1058	3	2	554
B4	MSC	03	MSC	FORCE	1063	3	2	643
84	MSC	03	MSC	FORCE	1115	3	2	495
E4	MSC/MDAC	03	MSC/MDAC	FORCE	1038	3	2	513
B4	TBC	04	GAC	FORCE	1122	3	2	649
B4	TBC	04	GAC	FORCE	1136	3	2	819
B4	TBC	04	GAC	FORCE	1137	3	2	656
B 5	LMSC	01	LMSC	FORCE	1085	3	2	665
B 5	LARC	02	NR	FORCE	1197	3	2	671
B5	LARC	02	NR	FORCE	1198	3	2	678
85	LARC	02	NR	FORCE	1200	3	2	682
B5	TBC	02	NR	FORCE	1055	3	2	686
B5	TBC	02	NR	FORCE	1091	3	2	695
B5	TBC	03	GAC	FORCE	1044	3	2	712
85	MMC	04	GAC	FORCE	1188	3	2	725
B5	MMC	04	MMC	FORCE	1182	3	2	737
B5	TBC	04	GAC	FORCE	1140	3	2	751
B 5	TBC	04	GAC	FORCE	1187	3	2	762

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LAUNCH AIRLOADS

=========	********							
BOOSTER CONFIG. CODE	BOOSTER CONTRACTOR	ORBITER CONFIG. CODE	ORBITER CONTRACTOR	TYPE TEST	CHRYSLER REPORT DMS-DR #	VOL.	PART	PAGE
D.			-========			=====	====:	
B1	MDAC	02	MDAC	PRESSURE	1174	3	2	770
B1	MDAC	02		PRESSURE		_	_	772
B2	MSFC	- -			1222	3	2	779
- -	, _	02	LMSC	PRESSURE	1255	3	2	785
B2	MSFC	02	MSFC	PRESSURE	1259	3	2	
B2	MSFC	02				_	_	791
B4	GD/C			PRESSURE	1273	3	2	796
<u> </u>	· -	02	NR I	PRESSURE	1129	3	2	803
B4	GD/C	03	NR F	PRESSURE	1129	3	_	
B4	TBC	04				_	2	803
	. 20	O.A.	GHC 1	PRESSURE	1136	.3	2	819

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LAUNCH HEAT TRANSFER

******	=========		=======================================			====	=====	====
BOOSTER	BOOSTER	ORBITER	ORBITER	TYPE	CHRYSLER	VOL.	PART	PAGE
CONFIG.	CONTRACTOR	CONFIG.	CONTRACTOR	RTEST	REPORT			
CODE		CODE			DMS-DR #			
		=======				=====	=======================================	====
B1	MDAC	02	MDAC	HEATING	1170	3	2	828
B1	MDAC	02	MDAC	HEATING	1238	3	2	833
B1	MDAC	02	MDAC	HEATING	1260	3	2	845
B1	MCDAC	02	MDAC	HEATING	1262	3	2	857
B1	MCDAC	02	MDAC	HEATING	1263	3	2	864
B1	MCDAC/MMC	02	MDAC/MMC	HEATING	1036	3	2	876
B1	MCDAC/MMC	02,	MDAC/MMC	HEATING	1036	3	2	876
B 2	GAC	02	GAC	HEATING	1234	3	2	908
82	MSFC	02	MSC	HEATING	1278	3	2	917
B2	TBC	02	GAC	HEATING	1261	3	2	922
B2	TBC	04	GAC	HEATING	1178	3	2	933
B3	GD/C	02	NR	HEATING	1032	3	2	940
B3	GD/C	02	NR	HEATING	1098	3	2	946
B 3	GD/C	02	NR	HEATING	1145	3	2	952
B 3	GD/C	02	NR	HEATING	1177	3	2	958
B3	GD/C	02	NR	HEATING	1264	3	2	967
B3	GD/C	03	NR	HEATING	1032	3	2	940
B3	GD/C	03	NR	HEATING	1098	3	2	946
B 3	LARC	03	MSC	HEATING	1016	3	2	914
B4	GD/C	02	NF:	HEATING	1032	3	2	940
B4	GD/C	03	NR	HEATING	1032	3	2	940
B5	LMSC	01	LMSC	HEATING	1143	3	2	978

ACRONYMS FOR TEST FACILITIES AND CONTRACTORS

AEDC -- ARNOLD ENGINEERING DEVELOPMENT CENTER

ARC -- AMES RESEARCH CENTER

CAL -- CORNELL AERONAUTICAL LABORATORY

CCSD -- CHRYSLER CORP. SPACE DIVISION

GAC -- GRUMMAN AEROSPACE CORPORATION

GD/C -- GENERAL DYNAMICS/CONVAIR

JPL -- JET PROPULSION LABORATORY

LARC -- LANGLEY RESEARCH CENTER

LMSC -- LOCKHEED MISSILES AND SPACE COMPANY

LTV -- LING TEMCO VOUGHT

MAC -- McDONNELL AIRCRAFT COMPANY

MDAC -- McDONNELL DOUGLAS AIRCRAFT CORPORATION

MMC -- MARTIN MARIETTA CORPORATION

MSC -- MANNED SPACECRAFT CENTER

MSFC -- MARSHALL SPACE FLIGHT CENTER

NR -- NORTH AMERICAN ROCKWELL

NRLAD -- NORTH AMERICAN ROCKWELL CORP., LOS ANGELES DIVISION

NSRDC -- NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER

TAM -- TEXAS A&M

TBC -- THE BOEING COMPANY

UW -- UNIVERSITY OF WASHINGTON

1.0 INTRODUCTION

1.1 Space Shuttle Development Phases

Development of the Space Transportation System (STS) encompassed the study of a large number of conceptual designs and an extensive wind tunnel testing program.

Phases of the development program are identified as:

Phase A - Concept Feasibility Studies - 1969-1970

Phase B - Preliminary Design Studies - 1970-1972

Phase C/D - Design and Development - 1972-1983

During the Phase A and B periods, completely reusable systems were studied including the "flyback" booster. However, due to the large cost of the completely reusable concept, NASA decided at the end of the Phase B period to employ an expendable booster design. Phase C/D design and development was then concentrated on a two-stage, parallel-burn booster system concept.

in the development stage (Phase B) of Space Shuttle design, extensive wind tunnel data were acquired for a variety of alternate configurations. These data were accumulated, converted into standard formats, placed in a data bank and documented. This work was performed by the Chrysler Corporation Military Public Electronic

Systems, Michoud Engineering Office under contract to NASA/MSFC.

Developmental configurations considered for early Space Shuttle studies were extremely varied. These included winged "flyback boosters." "Inline" staged launch vehicles and various "parallel staged" orbiter-booster Wind tunnel models of the various combinations. vehicles were tested both in the launch and entry Aerodynamics, airloads and heat configurations. transfer data were collected and compiled from four major contractors and parallel NASA directed studies. Results were documented individually through a series of NASA technical reports, contractor reports and test reports. The digital data and associated descriptive documentation which were archived have been maintained and are available for ongoing applications.

Current advanced launch vehicle studies are focusing on many of the approaches considered during original Space Shuttle studies. Available wind tunnel data for configurations similar to those currently being evaluated can be highly valuable to the preliminary design engineer.

The archived Phase B data is available to the technical community. Extracts of descriptive information and

configuration sketches, and digital test data have been compiled and are reported herein to facilitate use of the large data bank for booster, orbiter and launch configurations.

1.2 Chrysler's Test Database and Archive System

Extensive Chrysler involvement in wind tunnel data application on NASA programs prior to the Space Shuttle resulted in development of complex computer systems for automating these processes. These processes included automating the management and database functions in addition to automating the engineering data applications and computer graphics. These combined functions were reflected in the name DATAMAN.

The Chrysler developed Data Management System (DATAMAN) was used to develop design applicable aerodynamic data, generate extensive plots and cross plots, document, and database wind tunnel test data from the Space Shuttle Phase B test program under contract to the NASA/MSFC.

Chrysier initiated the DATAMAN project in early 1970 and continued through both the Phase B and Phase C/D test programs. Extensive management procedures were devised to effectivley identify and track the expected large volumes of data to be generated by a number of

contractors, and a variety of Phase B configurations.

Hence, a means of conveying descriptive information relative to the configurations and associated data was required.

A four digit report identifier was assigned as initial test inputs were made to the DATAMAN system to track and report activities on individual tests. For the Phase B test program, these identifiers were DMS-DR-1001 through DMS-DR-1278. Thus, approximately 278 sets of test results were processed, documented, and databased.

The assignment of identifiers was sequential and they are, therefore, chronological throughout the Phase B configuration management. Many other identifiers are associated with individual tests such as configuration type, NASA series number, test facility designations and contractor(s) involved.

Each test was documented in a DATAMAN test data report, test data were archived in standard DATAMAN formats, and salient tracking information was compiled. All these were disseminated to NASA technical and program management personnel for technical assessment of the data and managing the overall test program.

1.3 Extracting Phase B Test Database Information

The effort involved extracting and compiling Phase B test data contents and descriptive information from the archived test data bank and documentation file.

Digital database files contained a mix of basic tunnel recorded data and calculated analysis data used for graphic displays. These files were reduced to basic tunnel data and structured by configuration tested and contractor. A series of catalog reports were assembled to provide a readily accessible overview of test results available for future space transportation system studies.

These catalog reports are in increasing levels of detail. The first level consists of summary tables and selected sketches. These enable the user to scan for possible applications to his ongoing work.

For a promising or likely candidate configuration, the user can proceed to the second level of detail where all available configuration sketches and test conditions are compiled.

The third level of detail is the digital data files where tunnel recorded data resides.

2.0 COMPILATION OF PHASE B DATABASE ARCHIVE CONTENTS

2.1 Compilation Outline

Results of the Phase B database compilation are contained in the following list.

- 1) Summary catalog report, DMS-DR-01, containing an overview of database contents and availability.
- 2) A three volume catalog report, DMS-DB-02, containing configuration sketches and conditions tested. The three volumes correspond to booster, orbiter and launch test configurations.
- A series of magnetic data tapes containing available digital files. These are also structured by configuration and are described in transmittal documents DMS-TD-01 through 03, corresponding to booster, orbiter and launch test configurations, respectively.

4) A directory database information file formatted for the R-base relational database system.

Documentation of the contents of the database is contained in two reports: DMS-DB-01 and DMS-DB-02.

2.2 Summary Volume

The first document (DMS-DB-01) is a single volume summary report containing planform line drawings of the various configurations tested during the Space Shuttle Phase B program. Tabular information from the directory file is included and is divided by component (booster, orbiter and launch) and by test discipline (aerodynamics, airloads and heat transfer).

2.3 Model and Test Information

The second document (DMS-D8-02) is a three volume report containing extracts from the individual test data reports. All line drawings and collation sheets/run schedules are included. The three volumes correspond to the three component classifications; booster, orbiter and launch, respectively. A series of tabular information from the directory file provide an outline of available test information.

Structure of the tables and sketches is by component and test discipline with sorting by configuration and contractor. Each booster and each orbiter configuration tested are assigned a 2-character code for purposes of grouping and sorting.

These codes are

	General
Code	Configuration
Booster - B1	Canard
82	Cylindrical
B3	Delta Wing
B 4	Straight Wing
85	Unique
Orbiter - 01	Delta Body
02	Delta Wing
03	Straight Wing
0 4	Unique

Launch configurations tested are identified by a combination of the above codes. Test information is also sorted by individual contractors and NASA centers. Acronyms for these contractors and test facilities are presented in the frontispiece.

It should be noted that individual tests may be identified as multiple configurations. For example, booster and orbiter alone data may have been taken along with launch configurations in a single test. The test would appear in the tabular listings for all applicable classifications, but line drawings and run schedules would be included only in the launch section. Cross references are provided in the Index

of Figures for this case and also where multiple booster or orbiter configuration codes were involved in the same test.

Directory information displayed in tables 1, 3, 4 and 6 provide information only for the component documented in that individual volume. Tables 2 and 5 display information for all tests and components. An outline of the contents of the three volumes is illustrated in the index of Tables.

2.4 Digital Database

The digital database also follows the structure of table 1. Database contents represent data as received from the test facility. However, for some tests an additional, calculated, coefficient schedule is included. These additional schedules are mainly a second axis system or extract data from a multibalance test. Individual datasets within a file are encoded with the configuration code in the header information.

Test data are stored on five magnetic data tapes.

These tapes are 9-track, 6250 FPI, ASCII format.

File contents are:

						Config.
Tape#	Componer	<u>n t</u>	•	Files	<u> #Datasets</u>	Codes
1	Booster	_	Aerodynamics	53	4,216	B1-B5
2			Aerodynamics	89	4,500	01+02
3	Orbiter	-	Aerodynamics	20	1,962	03+04
4	Launch		Aerodynamics	3 4	4,034	B1-B3
5	Launch	_	Aerodynamics	19	637	B4+B5
•			Airloads	4	1,182	ALL
		-	Heat Transfer	1	2 1	ALL
				_		
			Total	220	16,552	

Specific test locations on the digital database are shown in table 6.

2.5 Directory File

The directory data file was constructed to assist in the categorization of tests and to generate tabular reports.

Information was extracted from existing administrative reports and from individual test data reports. The file was created using the R-base relational database system by Microrim. A description of the table information is as follows:

Table: DMS-OR# Read Password: NO Modify Password: NO

-		
Column definitions	1 Ab (Chamactons)	Description
# Name Type	Length (Characters)	•
1 QR# TEXT	4	DATAMAN Report Number
2 CR# TEXT	8	Contractor Report Number NASA TMX Report Number
3 THX# TEXT	12	NASA Test Series Number
4 NSN TEXT	14	
5 4VOL TEXT	1	Number of Report Volumes Report Volume Number
6 UOL\$ TEXT	1	Report Publication Date
7 PUC.DATE TEXT	13	Print Key for Tabular Report
B LINE TEXT	1	Test Discipline
9 TESTTYPE TEXT	15	•
10 COMP TEXT	7	Test Component
11 ECC TEXT	3	Booster Configuration Code
12 OCC TEXT	3	Orbiter Configuration Code
13 B-CODE TEXT	15	Booster Classification
14 8-CONTRA TEXT	10	Booster Model Contractor
15 O-CODE TEXT	15	Orbiter Classification
16 O-CONTRA TEXT	10	Orbiter Model Comtractor
17 FAC TEXT	5	Test Facility
10 TUN TEXT	6	Test Wind Tunnel
19 TEST# TEXT	15	Facility Test Number
20 FAC-TST# TEXT	26	Facility, Tunnel, Facility Test Number
21 MACH TEXT	15	Mach Number Range Model Scale
22 SCALE TEXT	12	Two Character Dataset Identifier
23 DAS-CODE TEXT	6	Booster Configuration Type
24 B-TYPE TEXT	23	Orbiter Configuration Type
25 O-TYPE TEXT	33	Description of Configurations Tested
26 CONFIG TEXT	220	
27 PURPOSE TEXT	150	Major Test Purpose Data Report Title
28 TITLE TEXT	250	Contractor/NASA Test Engineers
29 PROJ.ENG TEXT	175'	DATAMAN Cognizant Engineers
30 DMS-ENG TEXT	30	Directory File Comments/Exceptions
31 COMMENTS TEXT	150	Directory Fire Comments/Laceptions

Current number of rows: 488

2.6 Guide to Phase B Database Use

Users of the Chrysler Phase B database have varying levels of detail available for review. A typical application is to investigate similarities between current preliminary configuration designs and configurations tested during Phase B. As an example, current applications may be representative of a winged flyback booster with canards. To research this configuration the user could follow the steps illustrated below:

Step 1 - <u>DMS-DB-01</u>, <u>Summary Report</u>: This report would be reviewed to identify configurations of interest and corresponding configuration types and contractors.

	INDEX OF MUDEL	FIGURES - BOOSTER		
			PAGE NUMBER	<u> </u>
Booster Type	Contractor	<u>Aerodynamics</u>	Airloads	Heat Transfer
CANARD	MDAC	A-1-1	8-1-1	C-1-1
	MDAC/MMC	A-1-4		· · · · · · · · · · · · · · · · ·
	MSFC	A-1-5		
	ТВС	A-1-6		
CYLINDRICAL	GD/C	A-1-7		
	LMSC	A-1-8		
	MDAC	4		

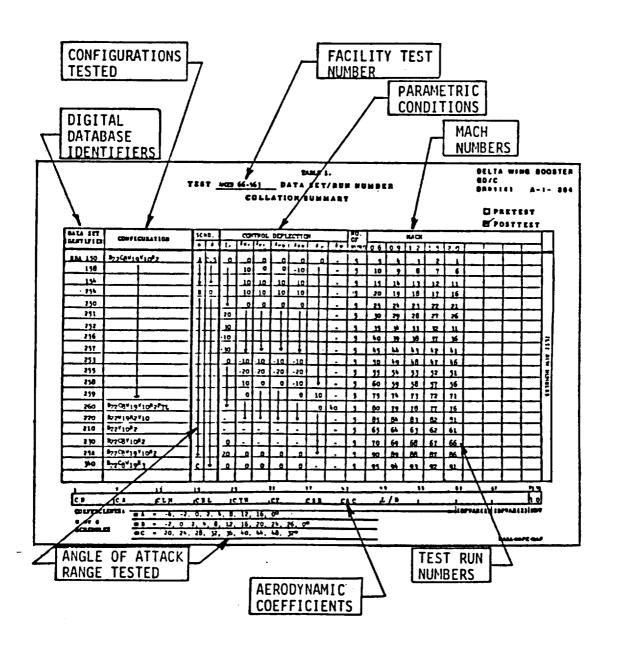
Step 2 - Table 1, DMS-DB-01, Summary Report: Using the configuration type and contractors identified above, a list of applicable tests is obtained.

				Space Shuttle Be	Table 1.1.1 Phose & Ulnd Labour Summer Later Aerodynam	,	
C094	ggarig, 1.8.	001348100	940-980	MACH BANGE	FACILITY	MOSEL SCALE	COMPIGURATIONS PESTED
	SANAPR	-	1035	0.18	-	0.01	MBAC BPACE MINITLE BOOSTER
••	CARACT	WOAG	1106	8.0-0.0	ALDC	0.00666	MASTIN BOOSTER
••	CADADO	****	1130	0.16	W1886	4.016	MOAC DELTA CAMANG DEGETER
	CARAGO	MAC/MAC	1014	1 11	MAC	0.08	MOAG/MMC SPACE SMUTTLE SOUSTER
	CARAGO	MDAC/SMC	1066	0.0-8.0	ARC	0.007	MOC-IMIC BEV COMPIG14 MOSTER (SINGLE SOC CAMARD)
	540400	mass/smc	1077	0.0-0.15	-	0.02	MOAC/MAC SPACE SMOTTLE BOSSTER
••	EAST-00	MDAC/MMC	1000	7.4	ARC	4 447	MOC-OME BAY BOOGIER BINGLE BOOT CANADO
		MOAC/IME	1116 _				MIC/MOC 10C 6003761

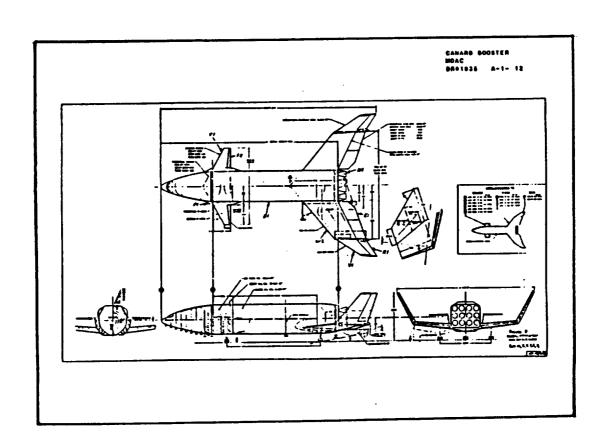
Step 3 - DMS-DB-02, Vol. 1, Booster Configuration: Locate
the model sketches and test conditions and
parameters.

	INDEX O	F FIGURES	
	BOOSTER A	ERODYNAMICS	
BOOSTER CONFIG.	BOOSTER CONTRACTOR	DMS-DR •	PAGE NUMBER
81	MDAC	1035	A-1-1
81	MDAC	1108	SEE C-1-23
81	MOAC	1139	A-1-13
81	MDAC/MMC	1054	A-1-45
81	MDAC/MMC	1066	A-1-64
81	MDAC/MMC	1077	A-1-78
B1	MDAC/MMC	1080	A-1-96
	MDAC/MMC	1116	- Andrews

Step 4a- <u>Dataset/Run Number Collation Summary</u>: Examine collation sheets to determine test Mach range, angle of attack/sideslip ranges, configurations and control surfaces/parametric conditions.



Step 4b- Configuration Sketches: Examine configuration sketches to obtain model and aerodynamic details such as model dimensions, wing type, canard surfaces, tail surfaces, body shape, etc.



Step 5 - Table 2. DMS-DB-02. Vol.1: Refer to table to determine publication availability: data report, contractor report or NASA publication.

				Table 2		
			Test Catab:s	Phase & Wind To e Listed by Chry Report Humar	parei rsier	
\$000-000 *******	484# 69:898 8986##	game (n	EASA CR BASA	BABA The-a Busing R	PACILITY TEST NUMBER	AGHICFE AGHICFE
****	81002-61401	•	103.150	••	MOFC 14TWT 461	9001751
1401	10001	•		62.626	ARC 3. SHOT TO	****
1923						-
1031	00111		102.100		BRLAG LEWF 432	
1035	40101	,	103.101	-	MAC 12WF 138)	8002169
1030	M0401-H0402	,		-	\$44C.8VBHT 147-178.206-328	LAUNCH
					LARC GVONT 147-179.200-322	9703 TLA

Step 6 - <u>Test Documentation</u>: Refer to test documentation to obtain test procedures, model description and data presentation.



Step 7 - Digital Database, Table 2 in DMS-DB-01 (Table 6 in DMS-DB-02); the user, after determining applicability, can access the test data from the digital database files for further analysis and application.

				TABLE 2	.1		
			_	PACE SHUTTL DIGITAL DA OOSTER AERO	TABASE		
	FILE	BCC	8-CONTRA	DR#	2-CHAR. CODE	D/S's	RECORDS
П	1	B1	MDAC	1035	СС	69	967
П	2		†	1133	Ж 2	574	8037
٦	3		MDAC/MMC	1054	CE	208	2185
	4			1056	AD	86	1033
		1 i	1 [1077	СØ	96	1057

3.0 NOMENCLATURE AND AXIS SYSTEMS

A standard set of nomenclature and axis systems definitions for DATAMAN reports were established during the Phase B test period. They were compiled from inputs from the various contractors and test facilities involved in the test program and are shown on the following pages.

Additions to the standards were required for individual tests due to the many configurations investigated. These additions are documented in the individual test data reports.

Numerous reference dimensions and moment reference center locations were used by the varius contractors for the many configurations tested. Model reference dimensions and moment center locations for each configuration are described in the individual test data reports. This information is also contained in the header block of each dataset on the digital database.

NOMENCLATURE General

SYMBOL	SADSAC SYMBOL	DEFINITION
8		speed of sound; m/sec, ft/sec
$c_{\mathbf{p}}$	CP	pressure coefficient; (p ₁ - p _m)/q
м	MACH	Mach number; V/a
p		pressure; N/m², psf
Q	Q(NSM) Q(PSF)	dynamic pressure; 1/2,002, N/m2, psf
RN/L	rn/l	unit Reynolds number; per m, per ft
v		velocity; m/sec, ft/sec
α	ALPHA	angle of attack, degrees
β	BETA	angle of sideslip, degrees
$oldsymbol{\psi}$	PSI	angle of yaw, degrees
φ	PHI	angle of roll, degrees
P		mass density; kg/m ³ , slugs/ft ³
	Refe	erence & C.G. Definitions
Ab		base area; m ² , ft ²
b	EREF	wing span or reference span; m, ft
c.g.		center of gravity
L _{REF}	IREF	reference length or wing mean aerodynamic chord; m, ft
S	SREF	wing eres or reference area; m ² , ft ²
	MRP	moment reference point
	XMRP	moment reference point on X exis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis
SUESCRIPTS b 1	1	base local
s t ss		static conditions total conditions free stream

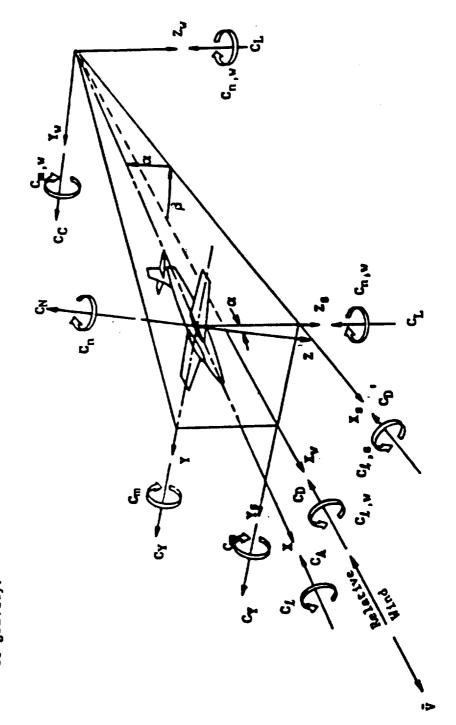
NOMENCLATURE (Continued)

Body-Axis System

SYMBOL	SADSAC SYMBOL	DEFINITION
CN	CN	normal-force coefficient; normal force
CA	CA	exist-force coefficient; $\frac{n \times int}{qS}$
CY	CΩ	side-force coefficient; side force
c _{Ab}	CAB	base-force coefficient; base force
		-A _b (p _b - p _m)/qS
c _a t	CAF	forebody axial force coefficient, C_A - C_{A_b}
C _m	CLM	pitching-moment coefficient; pitching moment qs/REF
Cn	CYN	yaving-moment coefficient; Yaving moment qSb
c.T	CBL	rolling-moment coefficient; rolling moment qSb
		Stability-Axis System
c _L	CL	lift coefficient; lift qS
Ci	CD	drog coefficient; drog qS
c_{D_b}	CDB	base-drag coefficient; base drag
$c^{\Omega^{\mathbf{L}}}$	CDF	forebody drag coefficient; CD - CDb
$c^{\boldsymbol{\chi}}$	CY	side-force coefficient; 51de force qS
C _m	CLM	pitching-moment coefficient; pitching moment qs/REF
Ç _{II}	CIN	yaving-moment coefficient; yaving moment qSb
\mathcal{L}_{2}	ರ್ಜ	rolling-moment coefficient; rolling moment qSb
L/D	L/D	lift-to-drog ratio; C _L /C _D

Kotes:

- 1. Positive directions of force coefficients moment coefficients, and angles are indicated by arrows.
- 2. For clarity, origins of wind and stability axes have been displaced from the center of gravity.



Axis systems, showing direction and sense of force and moment coefficients, angle of attack, and sidesilp angle

Table 1.1.3
Space Shuttle Phase B Wind Tunnel Test
Database Summary
Launch Aerodynamics

CONFIGURATIONS TESTED	MONC HIGH WING BOOSTER, MONC LOW CROSS RANGE ORBITER, MOAC LOW WING BOOSTER, MOAC HIGH CROSS RANGE ORBITER	MDAC ORBITER, MARTIN BOOSTER	DELTA WING ORBITER, BODSTER WITH CANARD, AFT SWEPT WING, TIP FINS	MDAC/MMC HCR DELTA WING ORBITER, MDAC/MMC SBC BOOSTER	MDAC/MMC 256-14 BOOSTER, MDAC 0050B URBITER, NAK/GDC B-15R-1 BOOSTER, NAR 1340 URBITER	TBC AR11981-1 BOUSTER WITH GAC C3-A ORBITER, BOEING AR11981-1 BOOSTER	MDAC HIGH WING BOOSTER, MDAC LOW CROSS RANGE ORBITER, MDAC LOW WING BOOSTER, MDAC HIGH CROSS RANGE ORBITER	MDAC BOOSTER WITH 5-IVB SECOND STAGE	MDAC PARALLEL BURN LAUNCH CONFIGURATION	GD/C B198 BOOSTER WITH MSC 040A ORBITER, GD/C B198 BOOSTER	TWIN PRESSURE FED BOOSTER WITH MSC 040A OREITER, CD/C E-18E-2 BOOSTER, CD/C B-18E-3 BOOSTER	PARALLEL BURN PRESSURE FED AND SRM BODSTERS, 040A ORBITER	PARAMETRIC LAUNCH VEHICLE	PARAMETRIC LAUNCH CONFIGURATION
MODEL. SCALE	0 007	0.00556	0.007	0.007	2600.0	0.002456	0.007	0.007	0.00285	996600.0	996600.0	900.0	0.0041	0.004
FAC	ARC	AEDC	ARC	LARC	LARC	MSFC	ARC .	₽ BC	MSFC	MSFC	MSFC	HDAC	MSFC	MSFC
MACH	0.6-2.0	2.0-6.0	0.6-2.0	2.3-1.6	0.23.	0.6-5.0	0.8-2.0	0.6-2.0	0.6-4.96	0 . 6-5 . 0	0.9-4.96	0.6-4.5	96.6-4.96	0.6-4.96
DHS-	1065	:108	1116	1117	1190	11.48	1065	1099	1166	1204	1210	1230	1256	1272
CONTRA	ИВАС	MDAC	нрас	MDAC	НВАС	CAC	HDAG	MDAC	MDAC	MSC	NS C	HSC	LMSC	LMSC
OCHTIC LD	DELTA WING	DELTA WING	DELIN WING	DELTA WING	DELTA WING	DELTA WING	STRAIGHT WING	UNIQUE CONFIGS.	UNIQUE CONFIGS.	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTO WING
ORB	02	02	20	20	20	20	60	04	4	80	۵ 2	80	02	20
BOOSTER CONTRA	HDAG	MDAC	HDAC	MDAC/MMG	MDAC/MMC	TBC	MDAC	MDAC	MDAC	CD/C	2/05	MDAC	MSFC	MSFC
BUOSTER CONFIG. I.D.	CANARD	CANARD	CANARD	CANARD	CONARD	CANARD	CANARD	CANARD	CANARD	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYL. INDRICAL	CYLINDRICAL
CODE	B1	E	3 1	81	Ξ	81	81	8	18	89	c B	G B	c e	G G

Table 1.1.3 - Continued Space Shuttle Phase B Wind Tunnel Test Database Summary

Launch Aerodynamics

CONFIGURATIONS TESTED	MSC 040A CRBITER WITH EXTERNAL Tanks	MSC 0400-2/2-156 PARALLEL BURN Launch Configuration	PARALLEL BURN SRM ASCENT CONFIGURATION	040 ASCENT CONFIGURATION	040A LAUNCH CONFIGURATION	040A LAUNCH CONFIGURATION	NR-110C ORBITER	PRESSURE FED BOOSTER WITH MSC 040A ORBITER, PRESSURE FED BOOSTER	GAC H-39 ORBITER , 3 SECMENT SOLID BOOSTER	GD/C STRAIGHT WING BOOSTER (EBX), GD/C DELTA WING BOUSTER (B-9J), NAR STRAIGHT WING ORBITER (130G), NAR DELTA WING	NR DELTA WING ORBITER, GD DELTA WING BOOSTER	NR/CD DELTA WING BOOSTER, NR 1340 DELTA WING ORBITER	MDAC/MHC 236-14 BOOSTER, MDAC 0050E ORBITER, NAR/GDC B-15E-1 BOOSTER, NAR 1340 ORBITER	GD/C 89U ROOSTER WITH NR. 1340 ORBITER, CD/C 89U BOOSTER, NR 1340 ORBITER
MODEL	900 0	96600 0	0.004	0 019	0.019	0.019	0.0044	996600.0	9966000	seco o	0.0076	0 0035	0.0029	0 0056
FAC	MSFC	MSFC	MSFC	LARC	₽BC	ARC	MSFC	MSFC.	MSFC	ວ ດວ	ARC	MSFC	LARC	CARC
MACH	0 %-9 0	0.9-2.0	96.h-6.0	2.3-4.62	0.8-1.4	1.6-2.2	0.6-4.96	0 6-4.96	0.6-4.96	1.1-1.6	0.6-2.0	0.6-3.0	0.23	1.6-2.16
DM5- DR#	1241	1249	1251	1265	1267	1267	1185	1227	1181	1052	1127	1130	1190	1237
ORBITER CONTRA		MSC	MSC	MSC	HSC	MSC	ä	MSC	פטכ	<u>α</u> 2	α z	αz	α Z	ς Z
CONFIG I D	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DEL.TA WING	DELTA WING	UNIQUE CONFIGS.	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DFL TA WING
anc coot	02	ĕ0	20	20	20	02	20	05	0 4	20	OR	02	25	<i>2</i> 0
BOOSTER CONTRA	#SFC	MSFC	MSFC	MSFC	MSFC	MSFC	Œ	TBC	MSFC	SD/C	3/05	2/09	3/a5	3/05
ROOSTER CONFIG I D	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING
3003 CODE	E 2	82	8	ಜ	28	82	G.	œ œ	62	6 8	(F)	83	œ Œ	Ea

Table 1.1.3 - Continued Space Shuttle Phase B Wind Tunnel Test Database Summary

Launch Aerodynamics

CONFIGURATIONS TESTED	MMC RETRO-GLIDE BOOSTER WITH MSC 040A ORBITER, MMC RETRO-GLIDE BOOSTER	MSC 5-13A ORBITER, MSC 58-13A BOOSTER	MSC/MDAC STRAIGHT WING BOOSTER, MSC/MDAC STRAIGHT AND DELTA WING ORBITERS, MSC/MDAC DELTA WING BOOSTER	TBC R5-IC BOOSTER WITH MSC 040A ORBITER, TBC R5-IC BOOSTER	GD/C STRAIGHT WING BOOSTER (BBX), GD/C DELTA WING BOOSTER (B-9J), NAR STRAIGHT WING OHBITER (130G), NAR DELTA WING ORBITER (1348)	NASA/MSC ORBITER CLOSE TO CLIPPED DELTA WING BOOSTER	MDAC CLIPPED DELTA WING BODSTER (PHASE A)	MSC DELTA WING BOOSTER, MSC STRAIGHT WING ORBITER (MODEL 5-13A)	MSC/MDAC STRAIGHT WING BOOSTER, MSC/MDAC STRAIGHT AND DELTA WING ORBITERS, MSC/MDAC DELTA WING BOOSTER	EXPENDABLE SECOND STAGE, PAYLGAD AND DELTA WING BOOSTER (B-15B-1), G/D DELTA WING BOOSTER WITH EXPENDABLE SECOND STAGE
MODEL	0.0034	0 008105	90.0	998600.0	0.0035	0.00725	NONE	0.008810	80.0	0.0031
FAC	MSFC	5	₽ ₽.	MSFC	200	LARC	LARC	12	ARC	MSFC
MACH	0.6-4.96	0 6-1 4	0.6-2.0	0.6-4.96	1.1-1.6	10.4	10.4	1.81-4.39	0.6-R.0	0 6-4.96
0MS- 0R4	1213	1115	1038	1183	1052	1047	1061	1058	1038	1119
ORBITER CONTRA	MSC	MSC	MSC/MDAG	MSC	ŭ	H SC	HSC	MSC	MSC/MDAC	α
OFINITER CONFIG I.D.	DELTA WING	DELTA WING	DELTA WING	DELTA WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAICHT WING	UNIQUE CONFIGS.
CODE	02	02	00	20	6	60	60	03	e 0	4
BNOSTER CONTRA	Ŭ H	HSC	M5C/MDAC	180	3/05	MDAC	MDAC	T U	HSC/HDAC	57/0 5
ROOSTER CONFIG. 1.0.	DELTA WING	DELTA WING	DEL.TA WING	DELTA WING	DELTA WING	DELTA WING	DEL.TA WING	DELTA WING	DELTA WING	DELTA WING
BOOS	83	ත ත	6	n	m m	68	e O	რ დ	e 8	e B

Table 1.1.3 - Continued Space Shuttle Phase B Wind Tunnel Test Database Summary

Launch Aerodynamics

CONFIGURATIONS TESTED	NA/CD DELTA WING BOOSTER B-158-1 WITH REUSABLE NUCLEAR STACE, NAR/CD REUSABLE NUCLEAR STACE, NAR/CD B-158-1 DELTA WING BOOSTER	TBC RS-IC BOUSTER WITH MSC 040A ORBITER, TBC RS-IC BOOSTER	NAR/GD STRAIGHT WING BOOSTER WITH NAR/GD STRAIGHT WING AND DELTA WING ORBITERS, NAR/GD STRAIGHT WING BOOSTER	NAR-GD/C STRAIGHT WING BOOSTER (B-BH MODIFIED), NAR-GD/C STRAIGHT WING ORBITER (130G), NAR-GD/C DELTA WING ORBITER (1348)	GD/C STRAIGHT WING BOOSTER (BBX), GD/C DELTA WING BOOSTER (B-9J), NAR STRAIGHT WING DRBITER (130G), NAR DELTA WING ORBITER (1348)	GD/C R-811-1 BOOSTER, NAR ORBITER	MSC/MDAC STRAIGHT WING ROOSTER, MSC/MDAC STRAIGHT AND DELTA WING GRBITERS, MSC/MDAC DELTA WING BOOSTER	NAR/GD STRAIGHT WING BOOSTER WITH NAR/GD STRAIGHT WING AND DELTA WING ORBITERS, NAR/GD STRAIGHT WING BOOSTER	NAR-GD/C STRAIGHT WING BOOSTER (B-BH MODIFIED), NAR-GD/C STRAIGHT WING ORBITER (130G), NAR-GD/C DELTA WING ORBITER (1348)
KODEL	0.0031	996600.0	0.0076	0.0035	0.0000	0.0076	BO . 0	0.0076	0.0035
FAC	MSFC	MSFC	ARC	MSFC	ວ ດວ .	ARC	ARC	ARC	MSFC
MACH	0.6-4.96	0.6-4.96	0.5-6.0	0 . 6-2 0	1.1-1.6	0.6-2.0	0.6-2.0	0.5-6.0	0.6-2.0
DMS- DR#	1162	1183	1050	1031	1052	1075	1038	1050	1091
CONTRA.	α Z	HSC.	ά	α Z	α Z	č Z	MSC/MDAC	α Ž	αŽ
CONFIG. I.D.	UNIQUE CONFIGS.	DFLTA WING	DELTA WING	DELTA WING	DEI.TA WING	DELTA WING	DELTA WING	STRAIGHT WING	STRAIGHT WING
ORB	40	40	05	05	05	05	02	60	03
BOOSTER	go/c	TBC	2/05	3/05	2/05	GD/C	HSC/MDAC	2/05	2/05
BOOSTER CONFIG. 1.0.	DELTA WING	DELTA WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING
8003 CODE	e &	8	89	8	8	4	B4	8	8

Table 1.1.3 - Continued Space Shuttle Phase B Wind Tunnel Test Database Summary

CONFIGURATIONS TESTED	GD/C STRAIGHT WING BOOSTER (BBX), GD/C DELTA WING BOOSTER (B-9J), NAR STRAIGHT WING ORBITER (130G), NAR DELTA WING	GD/C 8-811-1 BOOSTER, NAR ORBITER	MSC 231 REVISION B BASELINE BOOSTER, MSC 231 REVISION B BASELINE ORBITER	MSC DELTA WING BOOSTER, MSC STRAIGHT WING ORBITER (MODEL 5-13A)	MSC STRAIGHT WING ORBITER, MSC STRAIGHT WING BOOSTER	MSC 5-13A ORBITER, MSC 58-13A BOOSTER	MSC/MDAC STRAIGHT WING BOOSTER, MSC/MDAC STRAIGHT AND DELTA WING ORBITERS, MSC/MDAC DELTA WING BOOSTER	TBC STRAIGHT WING BOOSTER, GRLMMAN ROS-NB1 DELTA WING ORBITER	GAC ROS-NB2 ORBITER, LIQUID HYDROGEN TANKS, TBC 1202 BDOSTER	GAC ROS-NB2 ORBITER, TANKS, TBC 1202 BOOSTER	LOCKHEED STAGE-AND-ONE-HALF	LARC LOW FINENESS RATIO EOUSTER WITH NAR 1340 ORBITER, NASA LOW FINENESS RATIO BOUSTER
MODEL	SE00 0	0.0076	0.01	0 0008811	800.0	0 008103	0 08	0.00667	0.00667	0.00667	0 01	0.0076
FAC.	200	ARC	ARC	LTV	ARC	7	PRC .	ARC	ARC	ARC	ARC	LARC
MACH	1.1-1.6	0.6-2.0	0.6-1.4	1.81-4.39	0.6-2.0	0.6-1.4	0.6-2.0	0.6-2.0	0.6-1.5	0.6-2.0	0.6-2.0	1.5-2.16
DMS-	1052	1075	1042	1058	1063	1115	1038	1122	1136	1137	1085	1197
ORBITER CONTRA.	α	αχ	HSC	MSC	HSC	MSC	МSC/МDAC	GAC	O P C	פאכ	LMSC	αZ
TOREITER CONFIG I D	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	UNIQUE CONFIGS.	UNIQUE CONFIGS.	UNIQUE CONFIGS.	DELTA BODY	DEL TA WING
ORB	e0	60	60	60	E 0	60	60	6	4	9	01	20
BOOSTER CUNTRA	2/05	D/QD	MSC	MSG	M 5C	MSC	MSC/MDAC	180	180	TBC	CHSC	LARC
BOOSTER CONFIG. I.D.	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	UNIQUE CONFIGS.	UNIQUE CONFIGS
ROOS CODE	g G	8	2	B	48	4	8	7	8	89	£0	e G

Table 1.1.3 - Concluded Space Shuttle Phase B Wind Tunnel Test Database Summary

CONFIGURATIONS TESTED	LARC LOW FINENESS RATIO BOOSTER WITH NAR 1340 ORBITER, LARC LOW FINENESS RATIO BOOSTER	LOW FINENESS RATIO BOOSTER WITH NAR 1340 ORBITER, LOW FINENESS RATIO BOOSTER	NR/GD DELTA WING ORBITER, SATURN V S-IC BOOSTER	S-IC/NR HCR ORBITER	S-IC BOOSTER WITH GAC C4 ORBITER	TITAN T III L BOOSTER, GAC H-33 ORBITER	MMC TITAN III L BOOSTER WITH MMC DIO-7 ORBITER, MMC DIO-7 ORBITER	S-IC/GRUMMAN G-11 (M3T) DROP TANK ORBITER	S-IC BOOSTER WITH GAC H-33 ORBITER, GAC H-33 ORBITER
MODEL	NON	0.0076	99880000	996600.0	996600.0	99880000	0.0043	0 0034	0.0034
FAC.	LARC	LARC	MSFC	MSFC	MSFC	X DFR	MSFC	MSFC.	MSFC
MACH	10.2	0 4-1.2	0.6-1.96	0.60-1.96	0.6-1.3	96 6-9 0	0.6-3.48	0.6-4.96	0 6-4 96
DHS-	1198	1200	1035	1001	1041	1188	1182	1140	1187
CONTRA.	α Z	α Z	<u>α</u> Ζ	œ	GAC	GAC	HHC	DAG.	GAC
ORBITER CONFIG. 1.D.	DELTA WING	DELTA WING	DELTA WING	DELTA WING	STRAIGHT WING	UNIQUE CONFIGS	UNIQUE CONFIGS.	UNIQUE CONFIGS	UNIQUE CONFIGS.
CODE	os	05	05	02	60	4 0	40	0.4	04
BOOSTER	LARC	LARC	1 8C	TBC	TBC	M C	Z. O.	1 BC	160
BOOSTER CONFIG I.D	UNIQUE CONFICS.	UNIQUE CONFIGS.	UNIQUE CONFIGS.	UNIQUE CONFIGS	UNIQUE CONFIGS.	UNIQUE CONFIGS	UNIQUE CONFIGS.	UNIQUE CONFIGS.	UNIQUE CONFIGS.
BOOS		83	6	80 10	83	83	en en	8	0

Table 1.2.3 Space Shuttle Phase B Wind Tunnel Test Database Summary

ų.	
<u>.</u>	
Space Shuttle Phase B Wind Tunnel Test Database Summary	Launch Airloads
Space	

CONFIGURATIONS TESTED	MDAC BOOSTER, MDAC ORBITER	MDAC CANARD BOOSTER AND DELTA Wing orbiter	DOUBLE DELTA WING ORBITER IN LAUNCH CONFIGURATION	NASA DOUBLE DELTA ORBITER WITH External tank and SAB'S, NASA Double delta wing orbiter	DOUBLE DELTA WING ORBITER IN LAUNCH CONFIGURATION	GD/C STRAIGHT WING BOOSTER, GD/C STRAIGHT WING BOOSTER WITH NR DELTA WING ORBITER, GD/C STRAIGHT WING BOOSTER WITH NR STRAIGHT WING ORBITER	GD/C STRAIGHT WING BOOSTER, GD/C STRAIGHT WING BOOSTER WITH NR DELTA WING ORBITER, GD/C STRAIGHT WING BOOSTER WITH NR STRAIGHT WING ORBITER	GAC ROS-NB2 ORBITER, LIQUID Hydrogen tanks, 18C 12O2 Booster
MODEL	0.00556	0.00556	0.004	0.004	0 . 004	0.007	0.00761	0.00667
FAC.	AEDC	AEDC	MSFC	E S	MSFC	A BC	A BC	ARC
MACH	2.0-5.0	0.6-1.3	0.8-1.96	0.6-4.96	0.8-4.96	0 . 6 - 2 . 0	0 · 6 · 2 · 0	0.6-1.6
0 M M I	1174	1222	1255	1259	1273	1129	1129	1136
CONTRA	MDAC	MDAC	LMSC	M SFC	M SFC	<u>α</u> 2	α	GAC
ORBITER CONFIG. 1.D.	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	STRAIGHT WING	UNIQUE CONFIGS.
CODE	05	05	05	03	0	00	60	0
BOOSTER CONTRA.	MDAC	MDAC	MSFC	MSFC	MSFC	3/Q5	3/05	180
BOOSTER CONFIG. 1.D.	CANARD	CANARD	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING
BOOS	5	6	8	88	85	~	₹ 60	4

Table 1.3.3
Space Shuttle Phase B Wind Tunnel Test
Database Summary
Launch Heat Transfer

CONFIGURATIONS TESTED	MDAC CANARD BOOSTER WITH MDAC DELTA WING ORBITER, MDAC DELTA WING ORBITER, MDAC CANARD BOOSTER	MDAC 256-20 BOOSTER, MDAC Internal Tank Orbiter	MDAC BOOSTER, MDAC ORBITER	MDAC CANARD BOOSTER AND DELTA WING ORBITER	MDAC BOOSTER, MDAC ORBITER	MDC/MMC PHASE B BASELINE BOOSTER, MDC/MMC PHASE B LOW CROSS RANGE ORBITER, MDC/MMC PHASE B ALTERNATE BOOSTER, MDC/MMC PHASE B HIGH CROSS RANGE ORBITER	MDC/MMC PHASE B BASELINE BOOSTER, MDC/MMC PHASE B LOW CROSS RANGE ORBITER, MDC/MMC PHASE B ALTERNATE BOOSTER, MDC/MMC PHASE B HIGH CROSS RANGE ORBITER	MDC/MMC PHASE B BASELINE BOOSTER, MDC/MMC PHASE B LOW CROSS RANGE ORBITER, MDC/MMC PHASE B ALTERNATE BOOSTER, MDC/MMC PHASE B HIGH CROSS RANGE ORBITER	MDC/MMC PHASE B BASELINE BOOSTER, MDC/MMC PHASE B LOW CROSS RANGE ORBITER, MDC/MMC PHASE B ALTERNATE BOOSTER, MDC/MMC PHASE B HIGH CROSS RANGE ORBITER
MODEL	, oo . o	0.0065	9900.0	0.011	9 00 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.00325	0.00328	0.00328
FAC.	CAL	LARC	LARC	AEDC	LARC	LARC	LARC	LARC	LARC
MACH	7.6-13.0	0 •	10.0	o ·	2.3-3.7	o.	• •	• · · · · · · · · · · · · · · · · · · ·	• •
DMS-	1170	1238	1260	1262	1263	•	0.00	0.00	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CONTRA	MDAC	MOAC	MDAC	MDAC	MOAC	MDAC/MMC	MDAC/MMC	MDAC/MMC	MDAC/MMC
ORBITER CONFIG. I.D.	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	STRAIGHT WING	STRAIGHT WING
CODE	00	05	05	07	05	05	0	°	° o
BOOSTER CONTRA.	MDAC	MDAC	MDAC	MDAC	MDAC	MDAC/MMC	MDAC/MMC	MDAC/MMC	MDAC/MMC
BOOSTER CONFIG. 1.D.	CANARD	CANARD	CANARD	CANARD	CANARD	CANARD	CANARD	CANARD	CANARD
BOOS	50	8 0	E	6	6 0	5	5	<u>-</u>	5

Table 1.3.3 - Continued
Space Shuttle Phase B Wind Tunnel Test
Database Summary
Launch Heat Transfer

CONFIGURATIONS TESTED	GRUMMAN H-33 ORBITER, H-33/HO ORBITER LAUNCH CONFIGURATION	MSC 040A ORBITER / HO DROP Tank, 2-156 inch SAM	MSC 040A ORBITER WITH CYLINDRICAL BOOSTER 979-160, CYLINDRICAL BOOSTER 979-160	BOEING 1202 BOOSTER WITH GAC H-3T DELTA WING ORBITER, GAC H-3T DELTA WING ORBITER	CONVAIR STRAIGHT WING (B-68) AND DELTA WING (B-9J) BOOSTERS. NAR STRAIGHT AND DELTA WING ORBITERS, CONVAIR B-95 BOOSTER WITH NAR DELTA WING ORBITER	GD/C DELTA WING BOOSTER (B-9J), Nar Straight Wing Orbiter, Nar Delta Wing Orbiter	GD/C BOOSTER B-9U WITH NAR Orbiter 161C, GD/C Booster B-158-2, GD/C BOOSTER B-9U	90/C B-158-2 BOOSTER, NAR 1618 ORBITER	NR DELTA WING ORBITER, GD/C Booster	CONVAIR STRAIGHT WING (B-6B) AND DELTA WING (B-9J) BOOSTERS, NAR STRAIGHT AND DELTA WING ORBITERS, CONVAIR B-95 BOOSTER WITH NAR DELTA WING ORBITER	GD/C DELTA WING BOOSTER (B-9J), NAR STRAIGHT WING ORBITER, NAR DELTA WING ORBITER	CLIPPED DELTA WING BOOSTER WITH MSC ORBITER
MODEL	900.0	900.0	0.0033	0.00667	0 . 00 3 \$	900.0	0.00	0.009	0.013	. 00 38 00 0	900.0	0.00667
FAC.	LARC	LARC	LARC	LARC	LARC	LARC	LARC	AEDC	AEDC	LARC	LARC	LARC
MACH		0 . 8	• •	10.3	o .	2.6-3.7	7.80-7.95	0.8	0.0	o	2.5-3.7	10.0
DMS-	1234	1278	1261	8 .	1032	0 0	1146	1177	1264	1032	0 0 0 0	101
ORBITER CONTRA.	0 A C	MSC	O V C	OVO	α z	E	α	Œ	Œ	Z	Œ	M SC
TER	DELTA WING	DELTA WING	DELTA WING	UNIQUE CONFIGS.	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING
ORB CODE	03	03	03	6	03	6	05	8	8	c	80	ő
BOOSTER CONTRA.	0 A C	MSFC	1BC	18C	37 Q5	2/05	2/05	2/Q5	2/05	3D / C	2/08	LARC
BOOSTER CONFIG. 1.D.	DRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING
8008 CODE	83	29	83	83	89	e 6	6	8	° 6	e 6	93	e0

Table 1.3.3 - Concluded Space Shuttle Phase B Wind Tunnel Test Database Summary

Launch Heat Transfer

CONFIGURATIONS TESTED	CONVAIR STRAIGHT WING (B-BB) AND DELTA WING (B-9J) BOOSTERS, NAR STRAIGHT AND DELTA WING ORBITERS, CONVAIR B-95 BOOSTER WITH NAR DELTA WING ORBITER	CONVAIR STRAIGHT WING (B-88) AND DELTA WING (B-9J) BOOSTERS, NAR STRAIGHT AND DELTA WING ORBITERS, CONVAIR B-95 BOOSTER WITH NAR DELTA WING ORBITER	LOCKHEED STAGE-AND-ONE-HALF. LMSC DELTA BODY ORBITER
MODEL	\$ £ 00 ° 0	0.0036	LARC 0.0077
FAC.	LARC	LARC	LARC
MACH	o	• •	o. •
M C C C C C C C C C C C C C C C C C C C	1032 8.0	1032 8.0	1143 8.0
ORBITER CONTRA.	Œ	Œ	LMSC
ORBITER CONFIG. 1.D.	DELTA WING	STRAIGHT WING	DELTA BODY
CODE	00	0	6
BOOSTER CONTRA.	3/db	3/0 9	LM3C
BOOSTER CONFIG. I.D.	STRA GHT WING	STRAIGHT WING	UNIQUE CONFIGS.
BOOS	•	6	8

Table 2
Space Shuttle Phase B Wind Tunnel
Test Database Listed by Chrysler
DATAMAN Report Number

VEHICLE	BOOSTER	ORBITER	ORBITER	0AB1 TER	0881768	BOOSTER	ORBITER	ORBITER	ORBITER	ORB11ER	ORBITER	ORBITER	ORBITER	BOOSTER	BOOSTER	LAUNCH	BOOSTER	ORBITER	BOOSTER	BOOSTER	OR81 TER	ORBITER	ORBITER
		ARC 3.5HWT 78	MSFC 14TWT 453	LARC 20HT6 6315	GAC 710SWT 280	AEDC HWTC VT0055	MAC LSWT 223	TAM 710SWT S-VI	LARC 22HT 7341-7343	NRLAD LSWT 629	ARC 665WT 465	ARC 117WF 481-1	LARC LTPT 50	MAC LSWT 132	LARC LTPT 47	LARC CFHT 50	LARC UPWT 886	LARC LTPT 49	LARC UPWT 913	LARC CFHT 52	ARC 66SWT 484	LARC 710SWT 905	LARC 20HT6 6329
NASA TM-X NUMBER		62,035	;	i i	;	;	;	;	;	:	;	;	1	!	į Į	;	;	;	!!	!	62,066	!	;
NASA CR NUMBER	103,150	!	103,152	;	103,153	103,151	103,154	103,155	;	103,156	;	1	;	103,157	;	;	;	;	;	:	:	:	1
VOLUME NUMBER	-	-	-	-	-	-	-	**	-	-	-	-	-	-	-	-		-	-	-	-	-	-
NASA SERIES NUMBER	\$1002-51801	80008	\$1802	80011-80014	81809	\$1808	80016	80008	\$1206	\$0201	60008	80036	\$1207	\$1807	\$1201	H1201	\$1204	\$1205	\$1203	H0202	31806	\$1208	\$1202
DMS-DRe	1001	1002	1003	1004	1005	1006	1001	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023

Table 2 - Continued Space Shuttle Phase B Wind Tunnel Test Database Listed by Chrysler DATAMAN Report Number

VEHICLE	BOOSTER	BOOSTER	ORBITER	ORBITER	0881TER	BOOSTER	BOOSTER	ORBITER	LAUNCH	ORBITER	BOOSTER	BOOSTER	ORBITER	BOOSTER	LAUNCH	BOOSTER	LAUNCH	BOOSTER	LAUNCH	BOOSTER	LAUNCH	ROOSTER	271 200		LAUNCH
FACILITY TEST NUMBER	LARC 8VDHT 123-136,180-188	GDC 4HSWT 291-0	ARC 665WT 503	MSFC 14TWT 468	ARC 665WT 514	GDC 18HWT 247-0	GDC 812SWT 579-0	ARC 3.5HWT 88	LARC BVDHT 137-146,189-205	LARC 6VDHT 137-146,189-205	LARC BVDHT 137-146,189-205	TAM 710SWT S-XXIV	NRLAD LSWT 632	MAC LSWT 1351	LARC 8VDHT 147-179,206-322	LARC 8VDHT 147-179,206-322	LARC CFHT 53	LARC CFHT 53	LARC 6VDHT 147-179,206-322	LARC 8VDHT 147-179,206-322	ABC CFHT 53		20	NRLAD LSWT 630	ARC 665WT 486
N N N N N N N N N N N N N N N N N N N	;	;	;	;	62,039	1	;	62,065	;	1	;	;	;	ì	F 1	;	;	;	;	;	!	;	;	:	62,069
NASA CR NUMBER	F	103,158	4 1	119,962	;	103,159	119,963	;	ì	;	;	103,164	103,160	103,161	. !	;	;	;		;		; •	!	103,193	;
VOLUME	-	. .		-	-	-	-	-	-	-	-			. •				-			4	cu	8	-	-
NASA Series Number	(H0204	50505	* 020 %	30402-30408	,	20202		n 46	1		H0203	\$0024	2022	*0*00	20401-10401	20 40H - 1040H				H0401-H0404	H0401-H0403	H0401-H0403	50201	S 0 0 6 5
DMS-DR#	1 1	1024	1025	9 6		9 6	620		50	750	1032	1032	1033	460	0.35	980	980	950	9 E O C	1036	1036	1036	1036	1037	1038

Table 2 - Continued Space Shuttle Phase B Wind Tunnel Test Database Listed by Chrysler DATAMAN Report Number

- KO - SMO	MASSA SERIES NUMBER	VOLUME NUMBER	NASA CH CH CH CH	NASA TM-X NUMBER	FACILITY TEST NUMBER	VEHICLE
1038	\$0065	-	;	62.069	ARC 66SWT 486	BOOSTER
1039	80228	-	103,162	1	GDC 8125WT 580-0	BOOSTER
1040	\$0407	-	103,163	;	MAC LSWT 235	ORBITER
1041	80429	-	103,194	;	MAC LSWT 240	ORBITER
1042	80041	-	;	;	ARC 665WT 488	LAUNCH
1043	\$0235	-	103,085	•	MSFC 14TWT 471	ORBITER
1044	\$1044	-	103,195	;	MSFC 14TWT 470	LAUNCH
1045	\$1210	-	;	;	LARC LTPT 50-2	ORBITER
1046	81401	-	;	;	ARC 665WT 522	BOOSTER
1047	\$1209	-	;	;	LARC CFHT 54	LAUNCH
1048	\$1213	-	;	;	LARC 20HT6 6355-6329	ORBITER
1049	\$0208.01	-	!	;	LARC LTPT 52	ORBITER
1050	80206	-	;	62,070	ARC 66SWT 505	LAUNCH
1050	80206	-	;	62.070	ARC 66SWT 505	BOOSTER
1051	\$0217	-	103,196	!	MSFC 14TWT 466	LAUNCH
1051	\$0217	-	103,196	;	MSFC 14TWT 466	BOOSTER
1052	50207	-	103,197	!	GDC 4HSWT 304-0	LAUNCH
1052	\$0207	-	103,197	ļ.	GDC 4HSWT 304-0	BOOSTER
1052	80207	-	103,197	!	GDC 4HSWT 304-0	ORBITER
1053	\$1803	-	103,198	;	GAC 710SWT 279	ORBITER
1054	80410-80411	-	103,199	;	MAC LSWT 239	BOOSTER
1055	\$1006	-	103,200	;	MSFC 14TWT 476	LAUNCH
1056	H0201-H0203	-	!	1	LARC CFHT 51	ORBITER
1056	H0201-H0203	-] 1	1	LARC 8VDHT 1-58	ORBITER

Table 2 - Continued Space Shuttle Phase B Wind Tunnel Test Database Listed by Chrysler DATAMAN Report Number

VEHICLE COMPONENT COMPONENT	S-18/S-35 ORBITER	B LAUNCH	69 ORBITER	-8-1 ORBITER	LAUNCH	-38 ORBITER	4 LAUNCH	S ORBITER	8 LAUNCH	8 LAUNCH	4 BOOSTER	0881168	43 B00STER	12 ORBITER	103-766 BOOSTER	111/113 ORBITER	104 ORBITER	S-39 ORBITER	BORBITER	511 BOOSTER	511 LAUNCH	511 BOOSTER	11 LAUNCH	
FACILITY	TAM 710SWT 8-	LTV HSWT S-28	LARC 22HT 7369	TAM 7105WT S-8	LARC CFHT 54	TAM 7105WT S-38	ARC 665WT 524	LARC LTPT 545	ARC 66SWT 508	ARC 66SWT 508	ARC 665WT 504	MAC LSWT 248	LARC UPWT 9143	LARC UPWT 922	LARC 8VDHT 703-768	ARC 3.5HWT 1	ARC 3.5HWT 104	TAM 710SWT S	MAC LSWT 138	ARC 66SWT 5	ARC 66SWT 5	ARC 66SWT 5	ARC 66SWT 511	
1	;	;	;	;	1	;	62,072	;	;	1	62,037	! }	;	;	;	;	;	;	:	1	;	•	:	
N N N N N N N N N N N N N N N N N N N	119,853	119,854	;	119,855	;	119,856	;	į,	:	;	;	119,857	;	;	;	;	;	119,858	119,859	;	1	:	! !	
VOLUME NUMBER	-	-	-	-	-	•-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	7	8	
	8-50035	80028	\$1214	80 OO S	\$1211	8 0 0 S	\$0042	50244	50414	80414	50412	50423	\$1402	\$1212	H0214	50415-50434	80413	80039	80430	50219-50219.01	\$0219-\$0219.01	\$0219-\$0219.01	50219-80219.01	
DMS-DR	1057	8501	650	0 90	1901	1062	1063	1064	1065	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1075	1075	1075	,

Table 2 - Continued Space Shuttle Phase B Wind Tunnel Test Database Listed by Chrysler DATAMAN Report Number

DMS -	NASA SERIES NUMBER	VOLUME NUMBER	NASA CR NUMBER	NASA TM-X NUMBER	FACILITY TEST NUMBER	VEHICLE
1017	50419-50426	-	119.861	;	MAC LSWT 249	BOOSTER
1078	80214-50218		;	62.044	ARC 665WT 503/513	ORBITER
1079	80602	-	119,964	;	UW 8125WT 1021	BOOSTER
1080	S0416	-	į	62,038	ARC 3.5HWT 112	BOOSTER
1081	80603	-	119,862	1	GAC 710SWT 289	ORBITER
1082	50204-50218	-	1	62.045	ARC 665WT 503/513	ORBITER
1083	S0426	-	1	62.042	ARC 665WT 527	ORBITER
1084	\$0224 01	-	1 1	;	LARC CFHT 63	ORBITER
1085	50801	-	1	62.073	ARC 665WT 542	LAUNCH
1086	\$1217	-	ŧ	;	LARC 22HT 7377	ORBITER
1087	50238	-	;	;	LARC LTPT 59	BOOSTER
1088	\$1215	-	:	:	LARC 22HT 7376	ORBITER
1089	\$1401-\$1402	-	:	1	ARC 665WT 522	BOOSTER
1089	\$1401-\$1402	-	:	;	LARC UPWT 9143	BOOSTER
1090	80408	-	119,965	;	MAC LSWT 237	ORBITER
1091	\$1034	-	119,966	;	MSFC 14TWT 485	LAUNCH
1092	\$1019	-	119,967	1	AEDC PWT4T TC135	ORBITER
1093	\$0231	-	:	1	LARC CFHT 64	BOOSTER
1094	80428	-	;	62,108	ARC 3.5HWT 125	ORBITER
1095	50224	-	;	!	LARC 20HT6 6366	ORBITER
1096	50227	-		;	LARC UPWT 951	ORBITER
1097	\$1216		:	;	LARC 8TPT 574	ORBITER
1098	H0209	-	;	;	LARC UPWT 945	LAUNCH
1098	H0209	-	;	1 1	LARC UPWT 945	ORBITER

Table 2 - Continued Space Shuttle Phase B Wind Tunnel Test Database Listed by Chrysler DATAMAN Report Number

DMS - DMS	NASA SERA SERS NOMBER	VOLUME	NASA CR NUMBER	N S A S A S A S A S A S A S A S A S A S	FACILITY TEST NUMBER	VEHICLE
1008	0209	-	;	;	LARC UPWT 945	BOOSTER
1099	80433	-	1	62,059	ARC 665WT 557	LAUNCH
1100	\$0220	-	:	;	LARC LTPT 55	BOOSTER
1101	\$1219	-	:	1	LARC UPWT 944/961	ORBITER
1102	50213	-	119,992	1	MSFC 14TWT 481	BOOSTER
1103	50802	-	1	;	LARC UPWT 955	ORBITER
1104	50212	-	:	62,067	ARC 3.5HWT 109A	ORBITER
1104	\$0212	2	;	62,068	ARC 3.5HWT 109A	ORBITER
1105	80225	-	;	;	LARC 8TPT 573	ORBITER
1106	\$0221	-	:	;	LARC LTPT 57	ORBITER
1107	\$1218	-	:	;	LARC LTPT 58	ORBITER
1108	\$1023	-	119.973	!	AEDC SWTA 1163	BOOSTER
1108	\$1023	-	119,973	;	AEDC SWTA 1163	ORBITER
1108	\$1023	-	119,973	4 #	AEDC SWTA 1163	LAUNCH
1108	\$1023	8	119,972	ļ	AEDC SWTA 1163	BOOSTER
1108	\$1023	~	119,972	;	AEDC SWTA 1163	ORBITER
1108	51023	~	119,972	;	AEDC SWTA 1163	LAUNCH
1108	\$1023	က	119,971	;	AEDC SWTA 1163	BOOSTER
1108	\$1023	6	119.911	!	AEDC SWTA 1163	ORBITER
1108	\$1023	es	119,911	;	AEDC SWTA 1163	LAUNCH
1108	\$1023	4	119.968	1	AEDC SWTA 1163	BOOSTER
1108	\$1023	•	119,968	;	AEDC SWTA 1163	ORBITER
1108	\$1023	-	119,968	!	AEDC SWTA 1163	LAUNCH
1 108	\$1023	w	119,969	;	AEDC SWTA 1163	BOOSTER

Table 2 - Continued
Space Shuttle Phase B Wind Tunnel
Test Database Listed by Chrysler
DATAMAN Report Number

VEHICLE COMPONENT	ORBITER	LAUNCH	BOOSTER	ORBITER	LAUNCH	BOOSTER	ORBITER	LAUNCH	BOOSTER	BOOSTER	BOOSTER	ORBITER	ORBITER	ORBITER	LAUNCH	ORBITER	BOOSTER	BOOSTER	LAUNCH	ORBITER	BOOSTER	LAUNCH	ORBITER	BOOSTER
FACILITY TEST NUMBER	AEDC SWTA 1163	GDC 812SWT 587-0	GDC 812SWT 587-1	ARC 665WT 550	ARC 665WT 547	LARC CFHT 62	MSFC 14TWT 477	LTV HSWT S-30	LTV HSWT S-30	LTV HSWT S-30	ARC 665WT 510	LARC UPWT 963												
N A SA A T A T A T A T A T A T A T A T A	;	;	;	;	i i	1 1	;	!	1	;	62,115	62,060	;	:	!	;	;	62.049	:	;	;	;	;	;
NASA CR NUMBER	119,969	119,969	119,970	119,970	119,970	119,985	119,985	119,985	119.974	119,975	;	;	:	119.976	119,986	119,986	119,986	;	;	;	:	1	:	}
VOLUME NUMBER	v o	ĸr.	ဖ	မ	w	~	7	,	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	7
NASA SERIES NUMBER	\$1023	\$1023	\$1023	\$1023	\$1023	\$1023	\$1023	\$1023	50237	80247	80612	80908	\$1222	81018	00000	80030	80030	80431	80424	80424	80424	80424	80424	80424
OMS-08	1108	108	1108	1108	1108	108	1108	1108	1109	110	=======================================	1112	1113	1.14	1115	1115	1115	1 - 1 6	1117	1117	1117	1117	1117	1117

Table 2 - Continued
Space Shuttle Phase B Wind Tunnel
Test Database Listed by Chrysler
DATAMAN Report Number

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119,977	-
819.978	-
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616,919	-
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120,079	_
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Table 2 - Continued
Space Shuttle Phase B Wind Tunnel
Test Database Listed by Chrysler
DATAMAN Report Number

VEHICLE	0310008	- C		1					ORBITER	BOOSTER	LAUNCH	HONOR	LAUNCH	BOOSTER	BOOSTER	BOOSTER	BOOSTER	BOOSTER	LAUNCH	BOOSTER	ORBITER	HONDA	ORBITER	LAUNCH
FACILITY TEST NUMBER	TWT 490	MSFC 14TWT 490		1.4.TWT	14 TWT	MSFC 14TWT 490		MSFC 14TWT 490	ARC 3.5HWT 106	ARC 3.5HWT 105	ARC 665WT 561	ARC 665WT 561	ARC 668WT 551	LARC 8VDHT 1204-1213	NSRDC 710TWT 3110	NSRDC 710TWT 3110	NSRDC 710TWT 3110	NSRDC 710TWT 3110	MSFC 14TWT 491	ARC 66SWT 563	GAC 710SWT 290	LARC 8VDHT 1075-1107	LARC UPWT 9518	LARC 8VDHT 1237-1297
A A A A A A A A A A A A A A A A A A A	;	1	;	1 4	;	;	;	;	62,078	62.077	62,062	62,062	62,061	;	;	;	l ŧ	;	;	62.118	;	;	;	;
NASA CR NUMBER	119,994	119,994	119,994	119,994	119,994	119,994	119.994	119,994	:	1	;	;	;	;	119.995	119,996	119,997	119,998	119,981	:	119,982	}	;	!
VOLUME		-	٧	rı	e	E	-	-	-	-	-	-	-	-	-	~	m	~	-	-	-	-	•	-
NASA SER-ES NUMBER	S0242-S0242, 10	50242-50242.10	80242-80242,10	S0242-S0242 10	80242-80242,10	\$0242-50242,10	\$0242-50242,10	\$0242-\$0242,10	H0207	H0206	\$1601	\$1601	50611	H0406	\$1009	81009	\$1009	\$1009	81035	80229.01	80610	H0801	50245	Н0213
DMS-DR	1130	1130	1130	1130	1130	1130	1130	1130	1131	1134	1136	1136	1137	1138	1139	1139	1139	1139	1140		1142	1143	1144	1145

Table 2 - Continued
Space Shuttle Phase B wind Tunnel
Test Database Listed by Chrysler
DATAMAN Report Number

VEHICLE COMPONENT COMPONENT	LARC 8VDHT 1237-1297 BOOSTER	LARC CFHT 66 ORBITER	LARC V/STOL 007 ORBITER	C 14TWT 492 LAUNCH	C 14TWT 492 BOOSTER	101			LARC CFMT 68/71	MSFC 14TWT 493 BOOSTER	MSFC 14TWT 494 ORBITER	GAC 36HWT 017 ORBITER	MSFC 14TWT 495 BOOSTER	LARC CFHT 70 BOOSTER	LARC LTPT 63 ORBITER	GAC 36HWT 020 BOOSTER	GAC 36HWT 019 ORBITER	BOOSTER BOOSTER			13-0000 10-13-14-1 0L03-1-14-1 0L03-1-14-1-14-1-14-1-14-1-14-1-14-1-14-1-	MSFC 14TWT 497 ORBITER	MSFC 14TWT 497	GAC 15SWT 022 ORBITER	BOOSTER 3210		
NASA TM-X NUMBER	LARC	LARC	LARC	MSFC				LAR	LAR	HSH.	MSF	GAC	MSF	LAR		GAC	240		E	CA(MSI	SW	W	4 9		1	•
A & & & & & & & & & & & & & & & & & & &	1 1	!	;	6	7 0 7 7	19,983	1	•	:	119,999	120,000	119,984	119,987	;	;			9 6 6 6	120,003	119.989	120.004	120.004	120.004) n -	120,005	
VOLUME NUMBER	-	. •	- -		-	-	-	-	-	•	-	-	-	•		- •	<u>-</u>	-	-	-	-	-	-	• ,	-	-	
NASA SERIES NUMBER		8-204	_	\$1223	30616	50616	\$1224	80230	51221	50223	\$1026	10901			S0226	\$1225	S0605	80604	20617	50607	50249	07 60	n (S0249	80908	\$1010	
OMS-DMG	1 1 1	5	1 4 6	1147	1148	1148	1149	1150	1151	1152	1153	79.	, u	66-	1156	1157	1158	1159	1160	1.6.1	1162		7 4 1	1162	1163	1164	

Table 2 - Continued
Space Shuttle Phase B Wind Tunnel
Test Database Listed by Chrysler
DATAMAN Report Number

OMS-0R	NASA SERIES NUMBER	VOLUME NUMBER	NASA CR NUMBER	N TAN-X	FACILITY TEST NUMBER	VEHICLE COMPONENT
1166	\$1040	-	119,991	:	MSFC 14TWT 501	LAUNCH
1167	50615	-	120,006	1	GAC 710SWT 292	ORBITER
168	\$1228	•	;	ł	LARC LTPT 65	OR811ER
1169	80803	-	!	}	LARC LTPT 69	ORBITER
1170	H0404	-	120,001	!	CAL 96HST H/T MDAC	LAUNCH
1170	H0404	-	120,007	1	CAL 96HST H/T MDAC	ORBITER
1170	H0404	-	120,007	;	CAL 96HST H/T MDAC	BOOSTER
1171	50437	-	;	;	LARC STPT 595	ORBITER
1171	50437	-	;	;	LARC 44SPT 438	ORBITER
1172	\$1229	-	;	!	LARC LTPT 71	ORBITER
1173	\$1227	-	;	;	LARC UPWT 942	ORBITER
1174	P 1002	-	120,008	!	AEDC SWTA 1163	LAUNCH
1174	P 1002	7	120,061	;	AEDC SWTA 1163	LAUNCH
1174	P 1002	ю	120,062	-	AEDC SWTA 1163	LAUNCH
1174	P 1002	~	120,063	1	AEDC SWTA 1163	LAUNCH
1174	P 1002	w	120.064	;	AEDC SWTA 1163	LAUNCH
1174	P 1002	v	120,065	;	AEDC SWTA 1163	LAUNCH
1175	\$1226	-	1	;	LARC 44SPT 432	ORBITER
1176	\$1237	-	:	;	LARC 22HT 7386-7390	ORBITER
1177	H1009	-	120,009	;	AEDC HWTB 1182-1	BOOSTER
1177	H1009	-	120,009	;	AEDC HWTB 1162-1	ORB I TER
1177	H1009	-	120,009	;	AEDC HWTB 1162-1	LAUNCH
1117	H1029	7	119,987	;	AEDC HWTB 1162-2	BOOSTER
1117	H1029	7	119,987	;	AEDC HWTB 1162-2	ORBITER

Table 2 - Continued Space Shuttle Phase B Wind Tunnel Test Database Listed by Chrysler DATAMAN Report Number

8 KO - 8 KO	N N N N N N N N N N N N N N N N N N N	VOLUME	N A SA A	NASA TM-X NUMBER	FACILITY TEST NUMBER	VEHICLE
1117	1029	~	119.987	;	AEDC HWTB 1162-2	LAUNCH
1117	H1022	ю	120.029	;	AEDC HWTB 1162-3	BOOSTER
1117	H1022	е	120,029	;	AEDC HWTB 1162-3	ORBITER
1177	H1022	6	120.029	1	AEDC HWTB 1162-3	LAUNCH
1178	H0603	-	ţ †	;	LARC CFHT 69	LAUNCH
1178	H0603	-	:	1	LARC CFHT 69	OR81 TER
1179	H0206	-	1	62,058	ARC 3.5HWT 105	BOOSTER
1180	H0207	-	:	62.057	ARC 3.5HWT 106	ORB! TER
1.81	\$1042	-	120.010	!	MSFC 14TWT 504	LAUNCH
1182	\$1044	-	120.011	;	MSFC 14TWT 505	LAUNCH
1182	\$1044	-	120,011	;	MSFC 14TWT 505	ORBITER
1183	80618	-	120,012	;	MSFC 14TWT 506	LAUNCH
1183	80618	-	120,012	;	MSFC 141WT 506	BOOSTER
1.84	\$1236	-	120.013	;	MSFC 14TWT 507	OABITER
1185	80080	-	120,014	:	MSFC 14TWT 509	LAUNCH
1185	80080	-	120.014	1	MSFC 14TWT 509	ORBITER
- - - - -	80065	-	120,015	1	MSFC 14TWT 510	ORBITER
1187	81043	-	120,016	1	MSFC 14TWT 502	LAUNCH
1187	81043	-	120.016	;	MSFC 14TWT 502	ORBITER
1 1 8 6	\$1041	-	120,017	:	MSFC 14TWT 503	LAUNCH
1.89	\$1230	-	:	;	LARC LTPT 75	ORBITER
1190	\$1238	-	1	1	LARC 22HT 7377-79,7380-90	LAUNCH
1190	\$1238	-	1	;	LARC 22HT 7377-79,7380-90	BOOSTER
1190	\$1238	-	;	1	LARC 22HT 7377-79,7380-90	ORBITER

Table 2 - Continued
Space Shuttle Phase B Wind Tunnel
Test Database Listed by Chrysler
DATAMAN Report Number

VEHICLE	BOOSTER	BOOSTER	BOOSTER	ORBITER	ORBITER	ORBITER	LAUNCH	BOOSTER	LAUNCH	BOOSTER	ORBITER	LAUNCH	BOOSTER	ORBITER	ORBITER	ORBITER	LAUNCH	BOOSTER	ORBITER	ORBITER	BOOSTER	ORBITER	BOOSTER	ORBITER
FACILITY TEST NUMBER	TBC BTWT 1265	NSROC 710TWT 3310	LARC LTPT 73	LARC CFHT 76	LARC BTPT 604	LARC UPWT 964	LARC UPWT 962	LARC UPWT 962	LARC CFHT 74	LARC CFHT 74	LARC 448PT 430	LARC STPT 605	LARC 8TPT 605	MSFC 14TWT 498	ARC 665WT 605	LARC 20HT6 6392	MSFC 14TWT 512	MSFC 14TWT 512	TAM 7105WT S-8-2	AEDC SWTA 1162-F00	AEDC HWTB 1162-4	AEDC HWTB 1162-4	AEDC HWTB 1162-12	AEDC HWTB 1162-12
N T W W W W W W W W W W W W W W W W W W	;	;	i	i i	;	•	;	1	;	;	;	i i	;	;	62,112	:	;	!	i i	;	!	1	1	1
NASA CR LUMBER	120,018	120,019	;	;	:	156,979	;	1	;	:	1	!	4	120.020	;	;	120.021	120,022	120,023	120.024	120,025	120,025	120,043	120.043
VOLUME NUMBER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	8
NASA SERIES NUMBER	80619	\$1036	\$1239	\$1231	\$1232	\$1233	\$1240	\$1240	\$1242	\$1242	\$1241	\$1243	\$1243	\$1026.10	80054	\$1234	80250	80250	80008	H1008	H1009	H1009	H1014	H1014
0 N N 1	1191	1192	1 1 9 3	7611	1195	1196	1197	1197	1198	1198	1189	1200	1200	1201	1202	1203	1204	1204	1205	1206	1207	1207	1207	1207

NASA Series Number	VOL UME NUMBER			FACILITY TEST NUMBER	VEHICLE COMPONENT
			1		BOOSTER
	-	970.021		ELS THEFT	BOOSTER
	-	120.027	:		BOOSTER
	-	120,028	1	**************************************	AUNCH
	-	120,028	i i	MSFC 14TWT 514	ORBITER
	-	;	!	LARC 22HT 7397	
	-	120.030	;	CAL 81WT 18-063	
	-	120,031	;	MSFC 14TWT 517	LAUNCH
	<u>.</u>		;	MSFC 14TWT 517	BOOSTER
	-		;	1 ARC 20HT6 6397	BOOSTER
	-	:	! !		ORBITER
	-	;	1		ORBITER
	-	:	!	LARC OPWI servers	ORBITER
	-	1	:	1 1 1 1	ORBITER
	-	1	:		BOOSTER
	-	;	1		ORBITER
	-	120,033	:	JPL ZOSWI GG!	BOOSTER
	-	120,034	1	AEDC PWT4T TC174-PC1154	200
	-	120,034	;	AEDC PWT4T TC174-PC1154	LAUNCH
	٠ ,	460	,	AEDC PWT4T TC174-PC1154	BOOSTER
	~	, , , ,		AEDC PWT4T TC174-PC1154	LAUNCH
	7	120.034	t ŧ	O TANCE CO	BOOSTER
	-	120,035	1		ORBITER
1030	-	120,036	;	2	BALTER
	74	120,045	;	AEDC HWTB 1162-5	
	-	120.037	;	AEDC HWTB 1162-5	0000
		120.037	:	AEDC HWTB 1162-5	ORBITER
	•				

Table 2 - Continued
Space Shuttle Phase B Wind Tunnel
Test Database Listed by Chrysler
DATAMAN Report Number

VEHICLE	BOOSTER	ORBITER	BOOSTER	ORBITER	BOOSTER	LAUNCH	BOOSTER	BOOSTER	BOOSTER	ORBITER	BOOSTER	ORBITER	LAUNCH	BOOSTER	ORBITER	LAUNCH	BOOSTER	ORBITER	LAUNCH	BOOSTER	OABITER	LAUNCH	BOOSTER	ORBITER
FACILITY TEST NUMBER	AEDC HWTB 1162-7	AEDC HWTB 1162-7	AEDC HWTB 1162-8	AEDC HWTB 1162-8	MSFC 14TWT 521	MSFC 14TWT 523	MSFC 14TWT 523	TBC BTWT 1273	TBC 845WT 553	LARC LTPT 72	MDAC 4TWT S-222	MDAC 41WT S-222	MDAC 4TWT S-222	MDAC 4TWT S-222	MDAC 41WT S-222	MDAC 4TWT S-222	MDAC 41WT S-222	MDAC 4TWT S-222	MDAC 4TWT S-222					
NASA TM-X NUMBER	:	1	1	1	!	1	;	i	!	;	;	;	;	;	;	;	;	;	;	;	:	1	1	;
NASA CR NUMBER	120.046	120.046	120.047	120.047	120,038	120,039	120,039	120,069	120,069	:	120,083	120,083	120.083	120,084	120.084	120.084	120,085	120,085	120,085	120,086	120,086	120,086	120,087	120,087
VOLUME	~	8	т	e	-	-	-	-	-	-	-	-	-	~	8	7	ю	m	м	-	-	•	S	w
NASA SER-ES NUMBER	P1007	P 1007	P1008	P 1008	\$1047	80625	50625	80622-50623	80622-50623	\$1245	80441	80441	80441	80441	50441	50441	50441	50441	30441	50441	50441	\$0441	S0441	80441
DMS-DRO	1225	1225	1225	1225	1226	1227	1227	1228	1228	1229	1230	1230	1230	1230	1230	1230	1230	1230	1230	1230	1230	1230	1230	1230

Table 2 - Continued Space Shuttle Phase B Wind Tunnel Test Database Listed by Chrysler DATAMAN Report Number

120.087	0 M S - 0 P P	NASA SERIES NUMBER	VOLUME NUMBER	NASA CR NUMBER	ZASA TENTE	FACILITY TEST NUMBER	VEHICLE
120.048		S0441	so.	120,087	•		LAUNCH
Colored Colo		H1028	-	120,048	:	1162-	ORBITER
S1246 1		51246	-	;	!	UPWT	ORBITER
1		\$1246	-	;	!	LTPT	OABITER
H0605 H0605 H0605 1		\$1247	-	;	;	LTPT	ORBITER
Hobos Hobo		H0605	-	;	;	LARC 8VDHT 1948-2000	LAUNCH
S1249		H0605	-	;	;	LARC 8VDHT 1948-2000	ORBITER
S1246		S1249	-	1	;	LARC UPWT 970	ORBITER
\$1248 \$1248 \$1248 \$1248 1		H0216	-	;	1	LARC 6HRNT 489	BOOSTER
\$1248 1 LARC UPWT 966 \$1248 1 LARC UPWT 966 \$1250 1 LARC LTPT 86/86 \$1250 1 120,040 MSFC 14TWT 524 \$1048 1 120,041 MSFC 14TWT 526 \$1048 1 120,042 MSFC 14TWT 526 \$1057 1 120,050 MSFC 14TWT 528 \$1054 1 120,050 MSFC 14TWT 529 \$1054 1 120,053 MSFC 14TWT 529 \$1056 1 120,053 MSFC 14TWT 529 \$1056 1 120,053 MSFC 14TWT 528 \$1058 1 120,053 MSFC 14TWT 528 \$1058 1 120,055 MSFC 14TWT 538 \$1058 1 120,055 MSFC 14TWT 538		\$1248	-	;	:	UPWT	LAUNCH
\$1248 1 LARC LPWT 966 \$1250 1 LARC LPTF 66/86 \$1048 1 120,040 MSFC 14TWT 524 \$1046 1 120,041 MSFC 14TWT 526 \$1046 1 120,042 MSFC 14TWT 526 \$1057 1 120,050 LARC 20HT6 1-20 \$1052 1 120,050 MSFC 14TWT 528 \$1054 1 120,053 MSFC 14TWT 528 \$1054 1 120,053 MSFC 14TWT 528 \$1056 1 120,053 MSFC 14TWT 528 \$1058 1 120,053 MSFC 14TWT 538 \$1058 1 120,055 MSFC 14TWT 538		S1248	-	;	;	UPWI	BOOSTER
H1032 1		\$1248	-	;	;	LARC UPWT 966	0881168
\$1250 \$1049 \$1049 \$1046 \$1046 \$107040		H1032	-	;	:	LARC 20HT6 6386-6387	LAUNCH
\$1048 1 120,040 MSFC 14TWT 524 \$1048 1 120,041 MSFC 14TWT 526 \$1048 1 120,050 MSFC 14TWT 528 \$1057 1 120,050 LARC 20HTG 1-20 \$1052 1 120,051 MSFC 14TWT 529 \$1054 1 120,053 MSFC 14TWT 534 \$1058 1 120,053 MSFC 14TWT 538 \$1058 1 120,055 MSFC 14TWT 538		\$1250	-	;	!	LARC LTPT 86/88	ORBITER
\$1048 1 120,041 MSFC 14TWT 531 \$1048 1 120,042 MSFC 14TWT 526 \$0067 1 120,050 LARC 20HT6 1-20 \$1052 1 120,051 MSFC 14TWT 529 \$1054 1 120,051 MSFC 14TWT 534 \$1056 1 120,053 MSFC 14TWT 538 \$1058 1 120,055 MSFC 14TWT 538 \$1058 1 120,055 MSFC 14TWT 538		\$1049		120,040	!		BOOSTER
\$1048 1 120,042 MSFC 14TWT 526 \$0067 1 120,050 LARC 20HT6 1-20 \$1052 1 120,051 MSFC 14TWT 529 \$1054 1 120,053 MSFC 14TWT 534 \$0066 1 62,120 ARC 11TWT 628 \$1058 1 120,055 MSFC 14TWT 538 #1601 1 120,055 MSFC 14TWT 538		80076	-	120,041	i		LAUNCH
\$0067 1 120,050 MSFC 14TWT 528 \$1052 1 120,051 MSFC 14TWT 529 \$1054 1 120,053 MSFC 14TWT 534 \$0066 1 62,120 ARC 11TWT 628 \$1058 1 120,055 MSFC 14TWT 538 \$1058 1 120,055 MSFC 14TWT 538		\$1048	-	120.042	;		BOOSTER
\$1052 1 120,051 MSFC 14TWT 529 \$1054 1 120,053 MSFC 14TWT 534 \$0066 1 62,120 ARC 11TWT 628 \$1058 1 120,055 MSFC 14TWT 538 \$1058 1 120,055 MSFC 14TWT 538		80067	-	120,050	;		ORBITER
\$1052 1 120,051 MSFC 14TWT 529 \$1054 1 120,053 MSFC 14TWT 534 \$0066 1 62,120 ARC 11TWT 628 \$1058 1 120,055 MSFC 14TWT 538 H1601 1 62,114 ARC 3.5HWT 131		H0217	-	:	;	20HT6	BOOSTER
S1054 1 120,053 MSFC 14TWT 534 S0066 1 62,120 ARC 11TWT 628 S1058 1 120,055 MSFC 14TWT 538 H1601 1 62,114 ARC 3.5HWT 131		\$1052	-	120,051	;		BOOSTER
S1058 1 120,055 62,120 ARC 11TWT 628 S1058 1 120,055 MSFC 14TWT 538 H1601 1 62,114 ARC 3.5HWT 131		\$1054	-	120,053	1	MSFC 14TWT 534	LAUNCH
S1058 1 120,055 MSFC 14TWT 538 H1601 1 62,114 ARC 3.5HWT 131		80066	-	;	62,120		ORBITER
H1601 1 62,114 ARC 3,5HWT 131		81058	-	120,055	1		LAUNCH
		1601	-	;	62,114	ARC 3.5HWT 131	ORBITER

Table 2 - Continued
Space Shuttle Phase B Wind Tunnel
Test Database Listed by Chrysler
DATAMAN Report Number

VEHICLE		BOOSIER	ORBITER	LAUNCH	LAUNCH	ORBITER	LAUNCH	OBBITE				8000 E	BOOSIER	ORBITER	LAUNCH	BOOSTER	ORBITER	LAUNCH	LAUNCH	BOOSTED			LAURCH	BOOSTER	ORBITER	LAUNCH	LAUNCH
	SFC 147WT 541			MUTC -41W 543	MSFC 14TWT 544	LARC UPWT 979	MSFC 14TWT 540	MSFC 14TWT 540	LARC CFHT 78	LARC 8VDHT 2505-2565	LARC 8VDHT 2505-2565	HWTB		-70 - 70	8 8 8	AEDC HWTB 1162-9	AEDC HWTB 1162-9	AEDC HWT8 1162-9	LARC UPWT 967	AEDC HWTB 1162	AEDC HWTB 1162	AEDC HWIR 1162		AEUC HW18 1162	AEDC HWTB 1162	AEDC HWTB 1162	LARC UPWT 981
NASA TA-X NUMBER	;	;	;		•	;	;	;	:	;	!!	;	;	;	1	;	;	!	;	;	;	\$ •	1	}	;	;	;
NASA CR NUMBER	120,056	120.057	120.058		650.021	;	120,066	120.066	;	;	;	120,067	120.067	120.067	130 061	190.03	120,067	120,067	:	120,049	120,049	120.049	120.071		120,071	120,071	;
VOLUME NUMBER	-	-	-	•	-	-	-	-	-	-	-	-	-	-	c	ŧ	N	~	-	-		-	R	•	8	7	_
NASA SER-ES NUMBER	\$1059	\$1060	P 1009	\$1055		67-9	P 10 10	P1010	H1033	H0606	9090H	н1011	H1011	H1011	H1011		H1011	H1011	H1034	H1010	н1010	H1010	H1015-H1028	4 C C C I	070	H1015-H1028	81254
DMS-DR	1253	1254	1255	1256	1258		1259	1259	1260	1261	1261	1262	1262	1262	1262		1262	1262	1263	1264	1264	1264	1264	1264		¥07	1265

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Table 2 - Concluded Space Shuttle Phase B Wind Tunnel Test Database Listed by Chrysler DATAMAN Report Number

- S Z 0	NASA Series Number	VOLUME	NASA CR NUMBER	NASA TM-SA NUMBER	FACILITY TEST NUMBER	VEHICLE COMPONENT
t 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		100 070	1	AEDC HWTB 0288	ORBITER
1266	9- 00- 00-	- •		;	ARC 111WT 629	LAUNCH
1267	80019-80080	-	i I		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	LAUNCH
1267	20079-80080	-	;	1 1		ORBITER
1268	\$1252	-	1	1	LARC LIP: 103	
1270	\$1253	-	1	!	LARC 22HT 405	OHBITEH
1270	\$1253	8	:	;	LARC 22HT 405	088 I TER
1979	\$1055.1	_	120.074	i	MSFC 14TWT 544X	LAUNCH
1273	1101	-	120,075	;	MSFC 14TWT 550	LAUNCH
	2 90 10	-	120,076	;	MSFC 14TWT 551	OR81 TER
376	30630	-	120.073	;	TBC BTWT 1282	BOOSTER
27.6	80629-80630	-	120,073	!	TBC 845WT 557	BOOSTER
2 4 61	80629-80630	-	120.078	;	TBC BTWT 1282	BOOSTER
1276	50629-50630	-	120.078	;	TBC 845WT 557	BOOSTER
1277	51256	-	:	:	LARC CFHT 85	OR8 I TER
1278	H1035	-	;	1	LARC 8VDHT 2886-2929	LAUNCH

Table 3.1.3 Space Shuttle Phase B Wind Tunnel Test Database Chrysler DATAMAN Report Titles

REPORT TITLE	AERODYNAMIC CHARACTERISTICS OF THE MSC/MDAC SPACE SHUTTLE LAUNCH Configuration - orbiter/Booster interference effects (M = 0 6 TO 2.0)	STATIC AERODYNAMIC CHARACTERISTICS OF THE MSC-PROPOSED LAUNCH VEHICLE	S-IC BOOSTER/GRUMMAN C4 ORBITER DETERMINATION OF DOWNWASH ON 900 SQ. FT., 30 Degree oriented S-IC Fins and Optimum orbiter body and Aerodynamic Surface Incidence angles	LONGITUDINAL CHARACTERISTICS OF THE NASA-MSC ORBITER IN CLOSE PROXIMITY TO BOOSTER	AERODYNAMIC CHARACTERISTICS OF THE NAR/GD SPACE SHUTTLE LAUNCH CONFIGURATION ORBITER/BOOSTER INTERFERENCE EFFECTS (M = 0.6 TO 2.0)	STATIC STABILITY AND CONTROL INVESTIGATION OF THE NAR-GD/C STRAIGHT WING BOOSTER (B-8H MODIFIED) WITH THE STRAIGHT WING ORBITER (1348)	AERODYNAMIC FORCES AND MOMENT ON ORBITER AND BOOSTER DURING SPACE SHUTTLE Abort Separation	DETERMINATION OF STATIC LONGITUDINAL AND LATERAL DIRECTIONAL STABILITY CHARACTERISTICS OF THE NR/GD DELTA WING ORBITER/SATURN V S-IC BOOSTER	EFFECTS OF ORBITER/BOOSTER PROXIMITY INTERFERENCE ON THE AERODYNAMIC CHARACTERISTICS OF THE 0.0088105-SCALE MSC LAUNCH CONFIGURATION, MSC TEST SERIES S-XXVIII	LONGITUDINAL CHARACTERISTICS OF THE MDAC CLIPPED-DELTA BOOSTER (PHASE A) IN CLOSE PROXIMITY TO ORBITER	DETERMINATION OF DRAG, STABILITY AND CONTROL CHARACTERISTICS FOR THE MSC LAUNCH CONFIGURATION (STRAIGHT WING)	AERODYNAMIC CHARACTERISTICS OF THE MDAC SPACE SHUTTLE BOOSTERS AND ORBITERS IN LAUNCH CONFIGURATIONS (M = 0.6 TO 2.0)	AERODYNAMIC CHARACTERISTICS OF THE MDAC SPACE SHUTTLE BOOSTERS AND ORBITERS IN LAUNCH CONFIGURATIONS (M = 0.6 TO 2.0)	AERODYNAMIC CHARACTERISTICS OF SPACE SHUTTLE CONFIGURATIONS CONSISTING OF A STRAIGHT WING BOOSTER WITH VEE TAIL AND ORBITERS WITH STRAIGHT AND DELTA WINGS ISOLATED BOOSTER
VOLUME	-		-	-	-	-	-	-	~	-	-	<u>س</u> م	2	-
ORBITER CONFIG. 1.D.	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	DELTA WING	STRAIGHT WING	STRAIGHT WING	DELTA WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	DELTA WING	DELTA WING	STRA GHT WING
BOOSTER CONFIG + D	STRAIGHT WING	STRAIGHT WING	UNIQUE CONFIGS.	DELTA WING	STRAIGHT WING	STRAIGHT WING	DELTA WING	UNIOUE CONFIGS.	STRAIGHT WING	DELTA WING	STRAIGHT WING	CANARD	CANARD	STRAIGHT WING
0 M S + O + O + O + O + O + O + O + O + O +	1038	1042	4 4 0 0	1047	1050	1051	1052	1055	5 0 5 8	1061	1063	1065	1065	1075

Table 3.1.3 - Continued Space Shuttle Phase B Wind Tunnel Test Database Chrysler DATAMAN Report Titles

DMS-DR*	BOOSTER CONFIG I D	ORBITER CONFIG. D.	VOLUME NUMBER	REPORT TITLE
1085	UNIQUE CONFIGS	DELTA BODY	-	STATIC AERODYNAMIC CHARACTERISTICS OF THE LMSC STAGE-AND-ONE-HALF SPACE SHUTTLE CONFIGURATION (M = .60 TO 2.0)
1601	UNIQUE CONFIGS	DELTA WING	-	STUDY TO DEVELOP A SOLUTION FOR CONFIGURATION INSTABILITY FOR THE 0.003366 SCALE S-IC/NR HCR ORBITER
1099	CANARD	UNIQUE CONFIGS.	-	AERODYNAMIC CHARACTERISTICS AND INTERFERENCE EFFECTS ON THE MDAC COMPLETE ASCENT CONFIGURATION, UPPER STAGE/PAYLOADS, AND BOOSTER
1108	CANARD	DELTA WING	-	INVESTIGATION OF THE MCDONNELL-DOUGLAS ORBITER AND BOOSTER SHUTTLE MODELS IN PROXIMITY DATA PROXIMITY DATA
1108	CANARD	DELTA WING	74	INVESTIGATION OF THE MCDONNELL-DOUGLAS ORBITER AND BOOSTER SHUTTLE MODELS IN PROXIMITY DATA
1108	CANARD	DELTA WING	က	INVESTIGATION OF THE MCDONNELL-DOUGLAS ORBITER AND BOOSTER SHUTTLE MODELS IN PROXIMITY DATA
1108	CANARD	DELTA WING	•	INVESTIGATION OF THE MCDONNELL-DOUGLAS ORBITER AND BOOSTER SHUTTLE MODELS IN PROXIMITY DATA
1108	CANARO	DELTA WING	ĸń	INVESTIGATION OF THE MCDONNELL-DOUGLAS ORBITER AND BOOSTER SHUTTLE MODELS IN PROXIMITY DATA
90-	CANARD	DELTA WING	₩	INVESTIGATION OF THE MCDONNELL-DOUGLAS ORBITER AND BOOSTER SHUTTLE MODELS IN PROXIMITY DATA
1108	CANARD	DELTA WING	•	INVESTIGATION OF THE MCDONNELL-DOUGLAS ORBITER AND BOOSTER SHUTTLE MODELS IN PROXIMITY AT MACH 4 AND 6. INTERFERENCE FREE AND LAUNCH VEHICLE DATA
1115	STRAIGHT WING	STRAIGHT WING	-	EFFECT OF ORBITER/BOOSTER PROXIMITY INTERFERENCES ON THE AERODYNAMIC CHARACTERISTICS OF THE LAUNCH CONFIGURATION DURING SEPARATION OR ABORT MANEUVERS M = 0.6 - 1.38
1117	CANARD	DELTA WING	-	SUPERSONIC AERODYNAMIC CHARACTERISTICS OF THE MDAC/MMC SBC BOOSTER. DELTA Wing orbiter, and ascent configurations
1117	CANARD	DELTA WING	~	SUPERSONIC AERODYNAMIC CHARACTERISTICS OF THE MDAC/MMC SBC BOOSTER, DELTA Wing orbiter, and ascent configurations

Table 3.1.3 - Continued Space Shuttle Phase B Wind Tunnel Test Database Chrysler DATAMAN Report Titles

AEPORT JITLE	SUPERSONIC AERODYNAMIC CHARACTERISTICS OF THE MDAC/MMC SBC BOOSTER, DELTA WING ORBITER, AND ASCENT CONFIGURATIONS	AERODYNAMIC CHARACTERISTICS OF A SPACE SHUTTLE LAUNCH CONFIGURATION CONSISTING OF A DELTA-WING ORBITER AND A BOOSTER WITH CANARD, AFT SWEPT WING, AND TIP FINS (M = 0 & TO 2.0)	AERODYNAMIC CHARACTERISTICS OF A SPACE SHUTTLE LAUNCH CONFIGURATION CONSISTING OF A DELTA-WING ORBITER AND A BOOSTER WITH CANARD, AFT SWEPT WING, AND TIP FINS (M = 0 6 TO 2.0)	STATIC AERODYNAMIC AND CONTROL INVESTIGATION OF AN EXPENDABLE SECOND STAGE WITH PAYLOAD AND WITH DELTA WING BOOSTER (B-158-1)	AERODYNAMIC CHARACTERISTICS OF A DELTA-WING ORBITER AND STRAIGHT-WING BOOSTER SPACE SHUTTLE LAUNCH VEHICLE FOR MACH NUMBERS FROM 0.25 TO 2.0	AERODYNAMIC CHARACTERISTICS OF A SPACE SHUTTLE LAUNCH CONFIGURATION CONSISTING OF A DELTA WING ORBITER AND A DELTA WING BOOSTER (M = 0.6 TO 2.0)	STATIC STABILITY AND CONTROL INVESTIGATION OF NR/GD DELTA WING BOOSTER (B-20) AND DELTA WING ORBITER (134D) DELTA WING BOOSTER	STATIC STABILITY AND CONTROL INVESTIGATION OF NR/GD DELTA WING BOOSTER (B-20) AND DELTA WING ORBITER (134D) LAUNCH CONFIGURATION PIGGYBACK BASELINE	STATIC STABILITY AND CONTROL INVESTIGATION OF NR/GD DELTA WING BOOSTER (B-20) AND DELTA WING ORBITER (134D) LAUNCH CONFIGURATIONS PIGGYBACK, BELLY TO BELLY AND INCIDENCE VARIATIONS	STATIC STABILITY AND CONTROL INVESTIGATION OF NR/GD DELTA WING BOOSTER (B-20) AND DELTA WING ORBITER (134D) LAUNCH CONFIGURATIONS COMPONENT DATA BOOSTER, ORBITER BUILD-UP	FORCES, MOMENTS AND PRESSURES ON VARIOUS EXTERNAL LIQUID HYDROGEN TANKS MOUNTED ON A BOOSTER/ORBITER MATED LAUNCH CONFIGURATION	AERODYNAMIC CHARACTERISTICS OF A SPACE SHUTTLE LAUNCH CONFIGURATION CONSISTING OF A DELTA WING ORBITER WITH EXTERNAL HYDROGEN TANKS AND A STRAIGHT WING BOOSTER (M = 0.6 TO 2.0)	EFFECT OF ORBITER INCIDENCE ANGLE ON THE AERODYNAMIC CHARACTERISTICS OF THE BOEING S-IC BOOSTER/GAC G-11 ORBITER LAUNCH CONFIGURATION (M = 0.6 - 4.96)
VOLUME NUMBER	e	-	~	-	-	-	-	۲	m	•	-	-	-
ORBITER CONFIG. 4.0	DELTA WING	DELTA WING	DELTA WING	UNIQUE CONFIGS	UNIQUE CONFIGS	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	UNIQUE CONFIGS.	UNIQUE CONFIGS.	UNIQUE CONFIGS.
BOOSTER CONF1G, 1.D.	CANARO	CANARO	CANARD	DELTA WING	STRAIGHT WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	STRAIGHT WING	STRAIGHT WING	UNIQUE CONFIGS.
DMS-084	2111		0	1119	1122	1127	1130	1130	1130	1130	1136	1137	1140

Table 3.1.3 - Continued Space Shuttle Phase B Wind Tunnel Test Database Chrysler DATAMAN Report Titles

REPORT TITLE	AERODYNAMIC STABILITY AND CONTROL CHARACTERISTICS OF A TBC SPACE SHUTTLE BOOSTER AND GAC ORBITER M = 0 6 - 4.96	A STATIC STABILITY AND CONTROL INVESTIGATION OF THE NR-GD/C DELTA WING BOOSTER (B-15B-1) AND A REUSABLE NUCLEAR STAGE (RNS) M = 0.6 - 4.96	DETERMINATION OF THE STATIC STABILITY CHARACTERISTICS OF THE 0.00285-SCALE MDAC PARALLEL BURN LAUNCH CONFIGURATION	AERODYNAMIC CHARACTERISTICS OF THE GRUMMAN H-33 ORBITER MATED TO A THREE SEGMENT SOLID PROPELLANT BOOSTER	AERODYNAMIC CHARACTERISTICS OF SEVERAL LAUNCH CONFIGURATIONS UTILIZING THE TITAN III L BOOSTER AND MMC DTO-7 ORBITER	AERODYNAMIC STABILITY AND CONTROL CHARACTERISTICS OF A 0.0036-SCALE BOEING RS-1C/MSC-040A ORBITER AT MACH NUMBERS 0.6 TO 5.0	AERODYNAMIC CHARACTERISTICS OF THE NORTH AMERICAN ROCKWELL SPACE SHUTTLE DELTA-WING ORBITER (110C) ALONE AND WITH BELLY-MOUNTED EXTERNAL OXYGEN/HYDROGEN TANKS (M = 0.6 TO 5.0)	STATIC AERODYNAMIC CHARACTERISTICS OF THE S-IC BOOSTER/GAC H-33 ORBITER Launch Vehicle configuration	AERODYNAMIC CHARACTERISTICS OF THE TITAN T 111 L (1207-4)/GAC H-33 LAUNCH Configuration	HYPERSONIC STATIC LONGITUDINAL AERODYNAMIC CHARACTERISTICS OF PHASE B ASCENT CONFIGURATIONS	SUPERSONIC AERODYNAMIC CHARACTERISTICS OF A LOW FINENESS RATIO BOOSTER WITH DELTA WING ORBITER LAUNCH CONFIGURATION (M = 1.5 TO 2.16)	AERODYNAMIC CHARACTERISTICS OF A LOW-FINENESS-RATIO BOOSTER AND ASCENT CONFIGURATION AT HYPERSONIC SPEED M = 10.23	TRANSONIC AERODYNAMIC CHARACTERISTICS OF A LOW FINENESS RATIO BOOSTER AND DELTA WING ORBITER LAUNCH CONFIGURATION (M = 0.4 TO 1.2)	DETERMINATION OF LONGITUDINAL AND LATERAL-DIRECTIONAL AERODYNAMIC Characteristics of the B19B pressure-fed Booster and the B19B Booster/040A Orbiter Launch Configuration
VOLUME	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ORBITER CONFIG 1.D	DELTA WING	UNIQUE CONFIGS	UNIQUE CONFIGS	UNIQUE CONFIGS	UNIQUE CONFIGS	DELTA WING	DELTA WING	UNIOUE CONFIGS.	UNIQUE CONFIGS	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING
00000000000000000000000000000000000000	CANARO	DELTA WING	CANARD	CYLINDRICAL	UNIQUE CONFIGS.	DELTA WING	CYLINDRICAL	UNIQUE CONFIGS.	UNIQUE CONFIGS.	CANARD	UNIQUE CONFIGS.	UNIQUE CONFIGS.	UNIQUE CONFIGS.	CYLINDRICAL
DMS-DR#	1148	1162	1166	 60 -	1182	1183	 60 52	1187	60 60	1190	1197	1198	1200	1204

Table 3.1.3 - Continued Space Shuttle Phase B Wind Tunnel Test Database Chrysler DATAMAN Report Titles

Launch Aerodynamics

-AEPORT TITLE	HIGH ANGLE OF ATTACK TRANSITION AND LOW ANGLE OF ATTACK LAUNCH PHASE AERODYNAMIC STABILITY AND CONTROL OF GD/C B-18E-2, B-18E-3 DELTA WING BOOSTER, AND LAUNCH CONFIGURATION OF MSC-040A ORBITER AND TWIN PRESSURE FED BOOSTERS	AERODYNAMIC CHARACTERISTICS OF 0.003367 SCALE MODELS OF THE MMC RETRO-GLIDE BOOSTER ALONE AND MATED WITH THE MSC 040-A ORBITER	AERODYNAMIC CHARACTERISTICS OF A COMPOSITE BOOSTER/040A ORBITER LAUNCH CONFIGURATION WITH FIN AND BOOSTER BODY CONFIGURATION EFFECT CONTRIBUTION	AERODYNAMIC CHARACTERISTICS OF VARIOUS MDAC SPACE SHUTTLE ASCENT CONFIGURATIONS WITH PARALLEL BURN PRESSURE FED AND SRM BOOSTERS VOLUME I - ASCENT CONFIGURATION WITH HO CENTERLINE TANKS TI AND T2	AERODYNAMIC CHARACTERISTICS OF VARIOUS MDAC SPACE SHUTTLE ASCENT CONFIGURATIONS WITH PARALLEL BURN PRESSURE FED AND SRM BOOSTERS VOLUME 11 - ASCENT CONFIGURATION WITH HO CENTERLINE TANK T3	AERODYNAMIC CHARACTERISTICS OF VARIOUS MDAC SPACE SHUTTLE ASCENT CONFIGURATIONS WITH PARALLEL BURN PRESSURE FED AND SRM BOOSTERS VOLUME III - ASCENT CONFIGURATION WITH HO CENTERLINE TANK T4	AERODYNAMIC CHARACTERISTICS OF VARIOUS MDAC SPACE SHUTTLE ASCENT CONFIGURATIONS WITH PARALLEL BURN PRESSURE FED AND SRM BOOSTERS VOLUME IV - ASCENT CONFIGURATION PLUME STUDIES AND CONFIGURATION BUILDUP	AERODYNAMIC CHARACTERISTICS OF VARIOUS MDAC SPACE SHUTTLE ASCENT CONFIGURATIONS WITH PARALLEL BURN PRESSURE FED AND SRM BOOSTERS VOLUME V - ORBITER ALONE, TANKS ALONE, AND BOOSTER ALONE	STATIC AERODYNAMIC CHARACTERISTICS OF STAGE ARRANGEMENTS AT SUPERSONIC SPEEDS FOR A SPACE SHUTTLE (.0056 SCALE MODEL)	ABORT STAGING CHARACTERISTICS OF AN EXTERNAL OXYGEN TANK SEPARATING FROM THE SPACE SHUTTLE 040-A ORBITER (.006 SCALE MODEL) AT MACH NUMBERS OF 0.6, 2.0 AND 4.0	AERODYNAMIC STABILITY AND DRAG CHARACTERISTICS OF A PARALLEL BURN/SRM ASCENT CONFIGURATION AT MACH NUMBERS FROM 0.6 TO 4.96	AERODYNAMIC STABILITY AND DRAG CHARACTERISTICS OF A PARALLEL BURN/SRM ASCENT CONFIGURATION (M = 0.6 TO 4.96)	STATIC STABILITY AND CONTROL EFFECTIVENESS OF A PARAMETRIC LAUNCH VEHICLE
VOLUME NUMBER	-	-	-	-	N	ო	•	ĸ	~	-	-	-	-
ORBITER CONFIG 1.D.	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING
BOOSTER CONFIG 1.D	CYLINDRICAL	DELTA WING	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	DELTA WING	CYLINDRICAL	CYI, I NDR I CAL	CYLINDRICAL	CYLINDRICAL
DMS - DR*	1210	1213	1227	1230	1230	1230	1230	1230	1237	1241	1249	1251	1256

Table 3.1.3 - Concluded Space Shuttle Phase B Wind Tunnel Test Database Chrysler DATAMAN Report Titles

REPORT TITLE	AERODYNAMIC CHARACTERISTICS OF A SPACE SHUTTLE UAUN UNDITERTION OF MACH NUMBERS FROM 2.3 TO 4.62	AERODYNAMIC CHARACTERISTICS OF AN 040A SPACE SHUTTLE LAUNCH CONFIGURATION With Simulated Rocket Plumes at mach numbers from 0-8-TO-2.2	AERODYNAMIC CHARACTERISTICS OF AN 040A SPACE SHUTTLE LAUNCH CONFIGURATION WITH SIMULATED ROCKET PLUMES AT MACH NUMBERS FROM 0.8 TO 2.2	PERFORMANCE, STATIC STABILITY AND CONTROL EFFECTIVENESS OF A PARAMETRIC SPACE SHUTTLE LAUNCH VEHICLE
VOLUME	-	-	-	-
ORBITER CONFIG. I D	DELTA WING	DELTA WING	DELTA WING	DELTA WING
BOOSTER CONFIG. 1.D.	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL
# 40 - 8 M Q	1265	1267	1267	1272

Table 3.2.3 Space Shuttle Phase B Wind Tunnel Test Database Chrysler DATAMAN Report Titles

Launch Airloads

REPORT FILLE	PRESSURE TESTS OF MODELS OF A STRAIGHT-WING ORBITER, DELTA-WING ORBITER, AND A STRAIGHT-WING BOOSTER (MACH NUMBER 0.6 TO 2.2) STRAIGHT-WING BOOSTER	PRESSURE TESTS OF MODELS OF A STRAIGHT-WING ORBITER, DELTA-WING ORBITER, AND A STRAIGHT-WING BOOSTER (MACH NUMBER 0.6 TO 2.2) DELTA-WING ORBITER	PRESSURE TESTS OF MODELS OF A STRAIGHT-WING ORBITER, DELTA-WING ORBITER, AND A STRAIGHT-WING BOOSTER (MACH NUMBER 0.6 TO 2.2) STRAIGHT-WING ORBITER	FORCES, MOMENTS AND PRESSURES ON VARIOUS EXTERNAL LIQUID HYDROGEN TANKS MOUNTED ON A BOOSTER/ORBITER MATED LAUNCH CONFIGURATION	SPACE SHUTTLE ABORT SEPARATION PRESSURE INVESTIGATION BOOSTER DATA AT MACH 5	SPACE SHUTTLE ABORT SEPARATION PRESSURE INVESTIGATION ORBITER DATA AT MACH 5	SPACE SHUTTLE ABORT SEPARATION PRESSURE INVESTIGATION BOOSTER DATA AT MACH 3	SPACE SHUTTLE ABORT SEPARATION PRESSURE INVESTIGATION ORBITER DATA AT MACH 3	SPACE SHUTTLE ABORT SEPARATION PRESSURE INVESTIGATION BOOSTER DATA AT MACH 2	SPACE SHUTTLE ABORT SEPARATION PRESSURE INVESTIGATION ORBITER DATA AT MACH 2	PRESSURE INVESTIGATION OF A SPACE SHUTTLE LAUNCH CONFIGURATION CONSISTING OF A DELTA-WING ORBITER AND A SWEPT-WING BOOSTER WITH CANARD AND TIP FINS (M = 0.6 TO 1.3)	PRESSURE INVESTIGATION OF A SPACE SHUTTLE LAUNCH CONFIGURATION CONSISTING OF A DELTA-WING ORBITER AND A SWEPT-WING BOOSTER WITH CANARD AND TIP FINS (M = 0.6 TO 1.3)	AN INVESTIGATION OF THE LOAD DISTRIBUTION OVER THE SRB AND EXTERNAL TANK OF A 0.004 SCALE MODEL OF THE 049 SPACE SHUTTLE LAUNCH CONFIGURATION	PRELIMINARY PRESSURE DISTRIBUTIONS ON THE 049 ORBITER, ORBITER IN PRESENCE OF H/O TANK AND ORBITER IN LAUNCH CONFIGURATION
VOLUME NUMBER	-	7	က	-	-	N	ю	•	v n	ø	-	~	-	-
ORBITER CONFIG 1 D	DELTA WING	DELTA WING	DELTA WING	UNIQUE CONFIGS	DELTA WING	DELTA WING	DELTA WING	DELTA WING						
BOOSTER CONFIG I D	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	CANARD	CANARD	CYLINDRICAL	CYLINDRICAL						
• # O - S M O	1129	1129	1129	1136	1174	1174	1174	1174	1174	1174	1222	1222	1255	1259

Table 3.2.3 - Concluded Space Shuttle Phase B Wind Tunnel Test Database Chrysler DATAMAN Report Titles

Launch Airloads

ORBITER IN TH
STATIC SURFACE PRESSURES OF THE 0 004 SCALE 049 ORBITER IN THE LAUNCH CONFIGURATION
-
DELTA WING
CYLINDRICAL
1273

Table 3.3.3 Space Shuttle Phase B Wind Tunnel Test Database Chrysler DATAMAN Report Titles Launch Heat Transfer

REPORT TITLE	INTERFERENCE FLOW FIELD HEAT TRANSFER CHARACTERISTICS OF THE COMBINED DELTA WING BOOSTER AND MSC ORBITER	CONVAIR STRAIGHT WING (B-88) AND DELTA WING (B-9J) BOOSTERS WITH NAR Straight wing and Delta Wing Orbiters Interference Heat Transfer to Space Shuttle Vehicle Surfaces in Close Proximity at Hypersonic Velocity	THERMAL MAPPING INVESTIGATION MDAC/MMC PHASE B SPACE SHUTTLE VEHICLES	THERMAL MAPPING INVESTIGATION MDAC/MMC PHASE B SPACE SHUTTLE VEHICLES	THERMAL MAPPING INVESTIGATION MDAC/MMC PHASE B SPACE SHUTTLE VEHICLES CONTOUR TRACINGS	THERMAL MAPPING INVESTIGATION MDAC/MMC PHASE B SPACE SHUTTLE VEHICLES CONTOUR TRACINGS	HEAT TRANSFER RESULTS ON SPACE SHUTTLE PHASE B LAUNCH CONFIGURATION AT MACH NUMBERS OF 2.5 AND 3.7	HEAT TRANSFER TESTS OF THE LMSC DELTA-BODY ORBITER AND STAGE-AND-ONE-HALF ASCENT CONFIGURATION	HEAT TRANSFER TEST TO DETERMINE THERMAL PROTECTION SYSTEM DESIGN REQUIREMENTS FOR BOOSTERS B-9U, B-158-2, AND BOOSTER/ORBITER B-9U/161C	AERODYNAMIC HEATING TESTS OF THE MDAC DELTA WING ORBITER AND CANARD BOOSTER	HEAT TRANSFER RATE MEASUREMENTS ON CONVAIR BOOSTER (B-158-2) AND NORTH AMERICAN ROCKWELL ORBITER (1618) AT NOMINAL MACH NUMBER OF 8	HEAT TRANSFER RATE MEASUREMENTS ON CONVAIR BOOSTER (B-15B-2) AT NOMINAL MACH NUMBER OF 8	HEAT TRANSFER RATE MEASUREMENTS ON NORTH AMERICAN ROCKWELL ORBITER (1618) AT NOMINAL MACH NUMBER OF 8	DETERMINATION OF REENTRY HEAT TRANSFER TO ORBITER SURFACES AND INTERFERENCE HEATING DURING LAMINAR PORTION OF LAUNCH, BOOST, AND HIGH-ALTITUDE ABORT REENTRY FOR THE GAC H-3T DELTA-WING ORBITER WITH EXTERNAL TANKS AND BOEING 1202 BOOSTER	HEAT TRANSFER STUDY OF THE GRUMMAN H-33/HO ORBITER
VOLUME	-	-	-	-	7	~	-	-	-	-	-	~	ю	-	-
ORBITER CONFIG 1 D	STRAIGHT WING	STRAIGHT WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	STRAIGHT WING	DELTA BODY	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	UNIQUE CONFIGS.	DELTA WING
BOOSTER CONFIG. 1.D.	DELTA WING	STRAIGHT WING	CANARD	CANARD	CANARD	CANARD	DELTA WING	UNIQUE CONFIGS.	DELTA WING	CANARD	DELTA WING	DELTA WING	DELTA WING	CYLINDRICAL	CYLINDRICAL
DM9-DR	1016	1032	1036	1036	1036	1036	1098	1143	1145	1170	1177	1177	1177	1178	1234

Table 3.3.3 - Concluded Space Shuttle Phase B Wind Tunnel Test Database Chrysler DATAMAN Report Titles

Launch Heat Transfer

REPORT TITLE	ASCENT SHOCK IMPINGEMENT HEATING ON A MDAC SHUTTLE CONFIGURATION, M = 6.0	ASCENT SHOCK IMPINGEMENT HEATING ON A MDAC SHUTTLE CONFIGURATION, M = 10	AN EVALUATION OF ORBITER INDUCED INTERFERENCE MEATING ON THE BOOSTER. Orbiter tank, and interstage fairings for both low and high-alpha re-entry	HEAT TRANSFER TESTS OF THE MCDONNELL-DOUGLAS DELTA WING ORBITER MATED WITH -17A BOOSTER AT MACH NUMBER 8	HEAT TRANSFER TESTS OF THE MCDONNELL-DOUGLAS DELTA WING ORBITER AND THE -17A BOOSTER (NOT MATED) AT MACH NUMBER 8	ASCENT SHOCK IMPINGEMENT HEATING ON A MDAC SHUTTLE CONFIGURATION, M = 2.3 AND 3.7	ASCENT HEAT TRANSFER RATE DISTRIBUTION ON THE NR DELTA WING ORBITER AND THE GD/C BOOSTER AT MACH NUMBER OF 8 (MATED)	ASCENT HEAT TRANSFER RATE DISTRIBUTION ON THE NR DELTA WING ORBITER AND THE GD/C BOOSTER AT MACH NUMBER OF 8 (NOT MATED)	SHOCK IMPINGEMENT HEATING ON THE MSC 040A-2/156-INCH SRM SPACE SHUTTLE LAUNCH CONFIGURATION, M = 8.0
VOLUME NUMBER	-	-	-	-	~	-		~	-
OPBITER CONFIG I D	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING
BOOSTER CONFIG - C	CANARO	CANARD	CYLINDRICAL	CANARD	CANARD	CANARD	DELTA WING	DELTA WING	CYLINDRICAL
OMS-0R	1238	1260	1261	1262	1262	1263	1264	1264	1278

Table 4.1.3 Space Shuttle Phase B Wind Tunnel Test Database Test Engineers and Test Purposes

DMS-DR#	BOOSTER CONFIG. 1.D.	ORBITER CONFIG. 1.D	FACILITY TEST NUMBER	TEST ENGINEERS	S O O O O O O O O O O O O O O O O O O O
1038	STRAIGHT WING	STRAIGHT WING	ARC 665WT 486	J J. BROWNSON /ARC - A. M. WHITNAH /MSC	WING CONFIGURATION AND INTERFERENCE EFFECTS, LAUNCH CONFIGURATION
1038	STRAIGHT WING	DELTA WING	ARC 665WT 486	J. J. BROWNSON /ARC - A. M. WHITNAH /MSC	WING CONFIGURATION AND INTERFERENCE EFFECTS, LAUNCH CONFIGURATION
1038	DELTA WING	STRAIGHT WING	ARC 665WT 486	J. J. BROWNSON /ARC - A. M. WHITNAH /MSC	WING CONFIGURATION AND INTERFERENCE EFFECTS, LAUNCH CONFIGURATION
1038	DELTA WING	DELTA WING	ARC 665WT 486	J J. BROWNSON /ARC - A. M. WHITNAH /MSC	WING CONFIGURATION AND INTERFERENCE EFFECTS. LAUNCH CONFIGURATION
1042	STRAIGHT WING	STRAIGHT WING	ARC 665WT 488	R. C. ROBINSON, P. R. WILCOX	INTERFERENCE EFFECTS AND UNSTEADY LOADS INVESTIGATION
•	UNIQUE CONFIGS	STRAIGHT WING	MSFC 14TWT 470	L. C. SHROUT, M. Y. OIYE, R. M. MILLER / TBC	DOWNWASH ON 900 SO. FT. 30 DEG. ORIENTED FINS AND OPTIMUM BOOSTER BODY AND AERO SURFACE INCIDENCE
1047	DELTA WING	STRAIGHT WING	LARC CFHT 54	P. T. BERNOT /LARC	CLOSE-PROXIMITY EFFECTS
1050	STRAIGHT WING	DELTA WING	ARC 66SWT 505	J. J. BROWNSON /ARC - L. CLARKE /NR	INTERFERENCE EFFECTS, POSITION AND INCIDENCE ANGLE
1050	STRAIGHT WING	STRAIGHT WING	ARC 66SWT 505	J J. BROWNSON /ARC - L. CLARKE /NR	INTERFERENCE EFFECTS, POSITION AND INCIDENCE ANGLE
1051	STRAIGHT WING	STRAIGHT WING	MSFC 14TWT 466	E. C. ALLEN, J. F. HARDESTY Inr – F. W. Eder /GD/C	STATIC STABILITY AND CONTROL ABILITY
1051	STRAIGHT WING	DELTA WING	MSFC 14TWT 466	E. C. ALLEN, J. F. HARDESTY /nr - F. W. EDER /GD/C	STATIC STABILITY AND CONTROL ABILITY
1052	DELTA WING	STRAIGHT WING	GDC 4HSWT 304-0	J. M. DEBEVOISE /GD/C	ABORT SEPARATION EFFECTS
1052	DELTA WING	DELTA WING	GDC 4HSWT 304-0	J. M. DEBEVOISE /GD/C	ABORT SEPARATION EFFECTS
1052	STRAIGHT WING	STRAIGHT WING	GDC 4HSWT 304-0	J. M. DEBEVOISE /GD/C	ABORT SEPARATION EFFECTS

Table 4.1.3 - Continued Space Shuttle Phase B Wind Tunnel Test Database Test Engineers and Test Purposes

PURPOSE	ABORT SEPARATION EFFECTS	STATIC STABILITY CHARACTERISTICS, INCIDENCE ANGLE OPTIMIZATION	PROXIMITY INTERFERENCE EFFECTS	PROXIMITY INTERFERENCE EFFECTS	LONGITUDINAL CHARACTERISTICS OF BOOSTER IN CLOSE PROXIMITY TO ORBITER, POSITION AND GAPEFFECTS	DRAG, STABILITY AND CONTROL CHARACTERISTICS, CONFIGURATION	AERODYNAMIC CHARACTERISTICS. Launch Configuration	AERODYNAMIC CHARACTERISTICS. Launch Configuration	TRANSITION CHARACTERISTICS	TRANSITION CHARACTERISTICS	SUBSONIC TO SUPERSONIC AERO CHARACTERISTICS	STABILITY INVESTIGATION. GEOMETRY AND REYNOLDS NUMBER VARIATION	AERO CHARACTERISTICS AND INTERFERENCE EFFECTS	SEPARATION AERODYNAMICS
TEST ENGINEERS	J. M. DEBEVOISE /GD/C	C. H. MUHLHAUSER /MSFC	P O ROMERE, IVY H FOSSLER	P. O. ROMERE, IVY H. FOSSLER /MSC	P. T. BERNOT /LARC	J. J. BROWNSON /ARC - A. M. WHITNAH /MSC	J. J. BROWNSON /ARC - T. W. JARRETT /MDAC	J. J. BROWNSON /ARC - T. W. JARRETT /MDAC	J. J. BROWNSON /ARC	J. J. BROWNSON /ARC	J. J. BROWNSON /ARC - F. VELLIGAN, H. O. SVENDSEN /LMSC	L. WATTS /TBC	J. J. BROWNSON /ARC - D. BELL /MDAC-W	L L TRIMMER, R. H. BURT JARO - D. A. LOVE, J. M. RAMPY / LMSC - J. P. DECKER //LARC - K. L. BLACKWELL / MSFC
FACILITY TEST NUMBER	GDC 4HSWT 304-0	MSFC 14TWT 476	LTV HSWT S-28	LTV HSWI S-28	LARC CFHT 54	ARC 665WT 524	ARC 665WT 508	ARC 665WT 508	ARC 66SWT 511	ARC 665WT 511		MSFC 14TWT 485	ARC 665WT 557	AEDC SWTA 1163
ORBITER CONFIG. 1 D	0 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		STRAIGHT WING	STRA!GHT WING	STRAIGHT WING	STRAIGHT WING	DELTA WING	STRAIGHT WING	STRAIGHT WING	3 VI - 40	DELTA BODY	DELTA WING	UNIQUE CONFIGS.	DELTA WING
BOOSTER CONFIG. 1.D		STRAIGHT WING	STRAIGHT WING	DELTA WING	DELTA WING	STRA!GHT WING	CANARD	CANARD	33		UNIOUE CONFIGS	UNIQUE CONFIGS.	CANARD	CANARD
DMS-P4		1055	1058	1058	1061	1063	1065	1065		6 / 0	1075	1601	6601	

Table 4.1.3 - Continued Space Shuttle Phase B Wind Tunnel Test Database Test Engineers and Test Purposes

Launch Aerodynamics

DMS-0R*	BOOSTER CONFIG. 1.D.	CONFIG. 1.D.	FACILITY TEST NUMBER	TEST ENGINEERS	PURPOSE
1 1 5	STRAIGHT WING	STRAIGHT WING	TV HSWT S-30	P. R. R	AERO CHARACTERISTICS DURING SEPARATION OR ABORT
1115	DELTA WING	DELTA WING	LTV HSWT S-30	P. R. ROMERE, I. H. FOSSLER	AERO CHARACTERISTICS DURING SEPARATION OR ABORT
1117	CANARD	DELTA WING	LARC UPWT 963	E. B. GRAVES /LARC - G. HOLLE /MMC	AERODYNAMIC CHARACTERISTICS, Interference effects
8	CANARD	DELTA WING	ARC 665WT 512	T W JARRETT T L JENSEN /MDAC - J J BROWNSON /ARC	INTERFERENCE EFFECTS
1119	DELTA WING	UNIQUE CONFIGS.	MSFC 147WT 489	E. C. ALLEN /NR - F. W. EDER /GD/C	STATIC AERODYNAMIC STABILITY AND CONTROL CHARACTERISTICS
1122	STRAIGHT WING	UNIQUE CONFIGS.	ARC 665WT 546	J A MELLENTHIN /ARC - M QUAN, F TESSITORE /GAC	BASIC AERO FORCE DATA
1127	DELTA WING	DELTA WING	ARC 665WT 548	J. J. BROWNSON /ARC - H. ORESER /NR	AERODYNAMIC CHARACTERISTICS OF LAUNCH CONFIGURATION, INTERFERENCE EFFECTS
1130	DELTA WING	DELTA WING	MSFC 14TWT 490	E. C. ALLEN /NR - F. W. EDER	STATIC STABILITY AND CONTROL INVESTIGATION
136	STRAIGHT WING	UNIQUE CONFIGS.	ARC 665WT 561	J. BROWNSON /ARC - F. TESSITORE, M. QUAN /GAC	FORCES, MOMENTS AND PRESSURES On Various Tank Configurations
1137	STRAIGHT WING	UNIQUE CONFIGS	ARC 665WT 551	J. J. BROWNSON /ARC - F. T. TESSITORE, M. QUAN /GAC	AERODYNAMIC CHARACTERISTICS, Configurations with Tanks
140	UNIQUE CONFIGS.	UNIQUE CONFIGS.	MSFC 14TWT 491	L. WATTS /TBC	OPTIMUM INCIDENCE ANGLE AND CORRESPONDING AERODYNAMIC CHARACTERISTICS
1148	CANARD	DELTA WING	MSFC 14TWT 492	J. JOHNSON, L. L. WATTS /TBC	STABILITY AND CONTROL CHARACTERISTICS
1162	DELTA WING	UNIQUE CONFIGS.	MSFC 14TWT 497	E. C. ALLEN /NR	AERODYNAMIC FORCE AND MOMENT DATA, CONTROL EFFECTIVENESS
1166	CANARD	UNIQUE CONFIGS	MSFC 14TWT 501	K. L. BLACKWELL, D. G. LANE /MSFC	EVALUATION OF PERFORMANCE AS IN MDC E0376

Table 4.1.3 - Continued Space Shuttle Phase B Wind Tunnel Test Database Test Engineers and Test Purposes

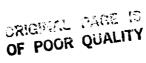
Launch Aerodynamics

PURPOSE	AERODYNAMIC CHARACTERISTICS Of Configuration	ASCENT AND REENTRY AERODYNAMIC DATA	REENTRY AND TRANSITIONAL GLIDE AERODYNAMIC DATA	REENTRY AND TRANSITIONAL GLIDE AERODYNAMIC DATA	AERODYNAMIC FORCE AND MOMENT DATA, ORBITER ALONE AND WITH EXTERNAL TANKS	AERODYNAMIC CHARACTERISTICS	STATIC STABILITY AND DRAG Data	STATIC AERODYNAMIC Characteristics, ascent Interference effects	STATIC AERODYNAMIC Characteristics, ascent Interference effects	SUPERSONIC AERODYNAMIC Characteristics	HYPERSONIC AERODYNAMIC CHARACTERISTICS, COMPONENT BREAKDOWN DATA	LONGITUDINAL AND LATERAL-DIRECTIONAL FORCE DATA	LONGITUDINAL AND LATERAL DIRECTIONAL CHARACTERISTICS	LAUNCH-PHASE STABILITY AND CONTROL
TEST ENGINEERS	F SIMS, R OLIVE /MSFC	D. J. MICHNA /MMC	L L WATTS R AINSWORTH, S VANDERLEEST / TBC	L L WATTS, R. AINSWORTH, S. VANDERLEEST / TBC	E. C. ALLEN /NR	J. F. SIMS /MSFC - R. W. AINSWORTH / TBC	J. F. SIMS /MSFC	J. P. ARRINGTON /LARC	J. P. ARRINGTON /LARC	D. C. FREEMAN, W. A. CORLETT /lang	P. T. BERNOT /LARC	D. C. FREEMAN /LARC	R F MCGINNIS, F W EDER	J. M. DEBEVOISE, R. F. MCGINNIS /GD/C
FACILITY TEST NUMBER	MSEC 14TWT 504	MSFC 14TWT 505	MSFC 14TWT 506	MSFC 14TWT 506	MSFC 14TWT 509	MSFC 14TWT 502	MSFC 14TWT 503	LARC 22HT 7377-79,7380-90	LARC 22HT 7377-79,7380-90	LARC UPWT 962	LARC CFHT 74	LARC BTPT 605	MSFC 14TWT 512	MSFC 14TWT 514
ORBITER CONFIG. (D.	UNIQUE CONFIGS	UNIQUE CONFIGS.	DELTA WING	DELTA WING	DELTA WING	UNIQUE CONFIGS.	UNIQUE CONFIGS.	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING
BOOSTER CONFIG. 1.D	CYLINDRICAL	UNIQUE CONFIGS.	DELTA WING	DELTA WING	CYLINDRICAL	UNIQUE CONFIGS.	UNIQUE CONFIGS.	CANARD	DELTA WING	UNIQUE CONFIGS.	UNIQUE CONFIGS.	UNIQUE CONFIGS.	CYLINDRICAL	CYLINDRICAL
DMS-0Re	1 60	1182	1.83	1183	1185	1187	1.88	1190	1190	1197	6 0	1200	1204	1210

Table 4.1.3 - Concluded Space Shuttle Phase B Wind Tunnel Test Database Test Engineers and Test Purposes

Launch Aerodynamics

PURPOSE	LAUNCH CONFIGURATION AND BOOSTER REENTRY CONFIGURATION STABILITY AND CONTROL DATA	FIN CONFIGURATION AND BODY CONFIGURATION EFFECTS	AERODYNAMIC CHARACTERISTICS. INDIVIDUAL CONTRIBUTIONS DURING ASCENT, AND RELATIVE ORBITER AND BOOSTER POSITION INTERFERENCE EFFECTS	FORCES AND MOMENTS. INTERFERENCE EFFECTS, COMPONENT EFFECTS	NORMAL FORCE, PITCHING MOMENT AND AXIAL FORCE COMPONENTS FOR VARIOUS TANK POSITION, INCIDENCE ANGLE	PERFORMANCE AND STABILITY CHARACTERISTICS, CONFIGURATION BUILD-UP, VARIATIONS EFFECTS	PERFORMANCE AND STABILITY CHARACTERISTICS, EFFECTS OF COMPONENT VARIATION	STATIC AERODYNAMIC Characteristics	ASCENT CONFIGURATION PERFORMANCE AND LATERAL CONTROL CHARACTERISTICS	EFFECT OF PLUME ON AERO CHARACTERISTICS	EFFECT OF PLUME ON AERO CHARACTERISTICS	STATIC STABILITY AND CONTROL EFFECTIVENESS
TEST ENGINEERS	D J. MICHNA, D. ALLAYAUD /MMC	R. W. AINSWORTH, J. C. JOHNSON, L. L. WATTS /TBC	I. W. JARRETT /MDAC	W. I. SCALLION, R. H. FOURNIER /LARC	I. FOSSLER /MSC - P. COLE	J. F. SIMS /MSFC - T. HAMILTON /NS!	F. SIMS /MSFC	R. ELLIS, M. GAMBLE /LMSC	W. I. SCALLION, E. B. GRAVES	J. J. BROWNSON /ARC - A. M. WHITNAH /MSC	J J. BROWNSON:/ARC - A M. WHITNAH /MSC	R. E. BUCHHOLZ, M. GAMBLE
FACILITY TEST NUMBER	MSFC 14TWT 517	MSFC 14TWT 523	MDAC 4TWT S-222	LARC UPWT 966	MSFC 14TWT 531	MSFC 14TWT 534	MSFC 14TWT 538	MSFC 14TWT 544	LARC UPWT 981	ARC 111WT 629	ARC 975WT 629	MSFC 14TWT 544X
ORBITER CONFIG. 1.D.	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING
BOOSTER CONFIG 1 0	DELTA WING	CYLINDRICAL	CYLINDRICAL	DELTA WING	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL
DMS-DR#	1213	1227	1230	1237	1241	12.49	1251	1256	1265	1267	1267	1272



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Table 4.2.3
Space Shuttle Phase B Wind Tunnel Test
Database Test Engineers and Test Purposes
Launch Airloads

PURPOSE	PRESSURE DATA PERTINENT TO AERODYNAMIC LOADING CHARACTERISTICS	PRESSURE DATA PERTINENT TO AERODYNAMIC LOADING CHARACTERISTICS	FORCES, MOMENTS AND PRESSURES ON VARIOUS TANK CONFIGURATIONS	SEPARATION TEST	LAUNCH CONFIGURATION PRESSURE DATA AT TRANSONIC SPEEDS	PRESSURE DISTRIBUTION ON H-O TANK AND SRM	PRESSURE DISTRIBUTIONS	PRESSURE DISTRIBUTIONS
TEST ENGINEERS	J. A. MELLENTHIN /ARC - B. W. F. CAMERON, C. R. LEEF /NR	J A MELLENTHIN /ARC - B. W I CAMERON, C. R. LEEF /NR	J BROWNSON /ARC - F TESSITORE, M. QUAN /GAC	L L TRIMMER, W. T. STRIKE /ARO - D. A LOVE /LMSC - J. M. RAMPY /NSI - J. P. DECKER /LARC - K. L. BLACKWELL /MSFC	J. M. RAMPY /NS! - K. L. BLACKWELL /MSFC - G. R. GOMILLION /ARO	R. LOTT /LMSC	J. F. SIMS /MSFC - J. T. HAMILTON, J. M. RAMPY /NSI	R E. BUCHHOLZ, M. GAMBLE //MSC-HREC
FACILITY TEST NUMBER	ARC 665WT 509	ARC 665WT 509	ARC 665WT 561	AEDC SWTA 1163	AEDC PWT4T TC174-PC1154	MSFC 14TWT 543	MSFC 14TWT 540	MSFC 14TWT 550
ORBITER CONFIG. 1.D.	DELTA WING	STRAIGHT WING	UNIQUE CONFIGS	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING
BOOSTER CONFIG. 1.D.	STRAIGHT WING	STRAIGHT WING	STRAIGHT WING	CANARD	CANARD	CYLINDRICAL	CYLINDRICAL	CYLINDRICAL
DMS-DR*	1129	1129	1136	1174	1222	1255	1259	1273

Table 4.3.3 Space Shuttle Phase B Wind Tunnel Test Database Test Engineers and Test Purposes

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PURPOSE	la.i	EVALUATION OF INTERFERENCE HEATING RATES	EVALUATION OF INTERFERENCE HEATING RATES	EVALUATION OF INTERFERENCE Heating rates	EVALUATION OF INTERFERENCE HEATING RATES	THERMAL MAPPING	THERMAL MAPPING	THERMAL MAPPING	THERMAL MAPPING	ASCENT HEAT TRANSFER Distributions, interference Heating information	ASCENT HEAT TRANSFER DISTRIBUTIONS, INTERFERENCE HEATING INFORMATION	HEAT TRANSFER TEST	THERMAL PROTECTION SYSTEM REGUIREMENTS
TEST ENGINEERS	D. H. CRAWFORD /LARC	W. R. GINSKY /GD/C - R. RAPARELL! /NR	W. R. GINSKY /GD/C - R. RAPARELL! /NR	W R. GINSKY /GD/C - R. RAPARELL! /NR	W R. GINSKY /GD/C - R. Raparelli /nr	P. L. CLICK, D. SCHMITT	P. L. CLICK, D. SCHMITT	P. L. CLICK, D. SCHMITT	P. L. CLICK, D. SCHMITT	R. L. STALLINGS /LARC - A. M. ROBERGE /GD/C - H. GOROWITZ /NR	R. L. STALLINGS /LARC - A. M. ROBERGE /GD/C - H. GOROWITZ /NR	H. D. SCHULTZ, K. W. MCGEE	R. O. DOUGHTY, R. C. ERICKSON /GD/C
FACILITY TEST NUMBER	LARC CFHT 50	LARC 8VDHT 137-146,189-205	LARC 8VDHT 137-146,189-205	LARC 8VOHT 137-146,189-205	LARC 8VOHT 137-146,189-205	LARC 8VOHT 147-179,206-322	LARC 8VDHT 147-179,206-322	LARC CFHT 53	LARC CFHT 53	LARC UPWT 945	LARC UPWT 945	LARC 8VDHT 1075-1107	LARC 8VDHT 1237-1297
ORBITER CONFIG. 1 D	STRAIGHT WING	STRAIGHT WING	DELTA WING	DELTA WING	STRAIGHT WING	DELTA WING	STRAIGHT WING	DELTA WING	STRAIGHT WING	STRAIGHT WING	DELTA WING	DELTA BODY	DELTA WING
BOOSTER CONFIG. 1.D	DELTA WING	STRAIGHT WING	STRAIGHT WING	DELTA WING	DELTA WING	CANARD	CANARD	CANARD	CANARD	DELTA WING	DELTA WING	UNIQUE CONFIGS	DELTA WING
DMS-DR#	6 1	1032	1032	1032	1032	1036	1036	1036	1036	1098 8	1098	1 1 4 3	1145

Table 4.3.3 - Concluded Space Shuttle Phase B Wind Tunnel Test Database Test Engineers and Test Purposes

Launch Heat Transfer

PURPOSE	THERMAL ENVIRONMENT DATA FOR THERMAL PROTECTION SYSTEM DESIGN	ASCENT AND REENTRY HEATING DATA	INTERFERENCE HEATING DURING LAUNCH, HEATING DURING REENTRY AND HIGH ALTITUDE ABORT REENTRY	HEAT TRANSFER, INTERFERENCE LAUNCH CONFIGURATION LAMINAR DATA, RE-ENTRY TURBULENT FLIGHT DATA	ASCENT SHOCK IMPINGEMENT HEATING INVESTIGATION	HEATING CHARACTERISTICS During Ascent	INTERFERENCE HEATING. Re-entry Heating	INTERFERENCE HEATING DATA	PLOTTED AND TABULATED HEAT TRANSFER DATA	INTERFERENCE HEATING DATA	SHOCK IMPINGEMENT HEATING AT M = 8
TEST ENGINEERS	T. L. ANDRESEN /MDAC-E	J D WARMBROD /MSFC - W. R. MARTINDALE, R. K. MATTHEWS /ARO	A D'ERRICO, C. SONITSCH /GAC	C OSONITSCH, A D'ERRICO /GAC - T. CREEL /LARC	J. D. WARMBROD /MSFC - J. Y PARKER /NS1 - J. E. REARDON /REMTECH	H D CRAWFORD /LARC - J D WARMBROD /MSFC - J E. REARDON / REMTECH - J Y PARKER /NS!	J. HOUSER, A. PERLBACHS /TBC - L. E. CLARK /LARC	R. K. MATTHEWS, W.R. MARTINDALE /ARO - J. D. WARMBROD /MSFC	J. D. WARMBROD /MSFC - J. Y. PARKER /NSI - J. REARDON /REMTECH	R. K. MATTHEWS, W. R. MARTINDALE /ARO - J. D. WARMBROD /MSFC	J Y. PARKER /REMTECH - J. D WARMRROD /MSFC - C. B. JOHNSON /LARC
FACILITY TEST NUMBER	CAL 96HST H/T MDAC	AFDC HWTB 1162-1	LARC CFHT 69	LARC 8VDHT 1948-2000	LARC 20HT6 6386-6387	LARC CFHT 78	LARC 8VDHT 2505-2565	AEDC HWTB 1162-9	LARC UPWT 967	AEDC HWTB 1162 .	LARC 8VDHT 2886-2929
ORBITER CONFIG I D	DELTA WING	DELTA WING	UNIONE CONFIGS	DELTA W!NG	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING	DELTA WING
BOOSTER CONFIG 1.0	CANARD	DELTA WING	CYLINDRICAL	CYLINDRICAL	CANARD	CANARD	CYLINDPICAL	CANADO	CANARD	DELTA WING	CYLINDRICAL
6	0211	1117	1178	1234	1238	1260		1262		1264	1278

Table 5

Space Shuttle Phase B Facility Wind Tunnel Summary

FAC11.1TY	SURFACILITY	FACILITY TEST NUMBER	VEHICLE	TEST DISCIPLINE	OMS-08*	PUB. DATE	DATASET
AEDC	HW18	0288	088 I TER	HEAT - TRANSFER	1266	07/72	۲ ۲
AECC	HWT B	1162	ORBITER	HEAT-TRANSFER	1264	07/72	₹ 2
AEDC	HW 1 B	1162	LAUNCH	HEAT-TRANSFER	1264	07/72	۷ / ۷
AEDC	HW18	1162	BOOSTER	HEAT-TRANSFER	1264	07/72	A / N
AEDC	HW18	1162-1	088 I TER	HEAT - TRANSFER	1177	11/71	٧ <i>/ ٧</i>
AECC	HW18	1162-1	LAUNCH	HEAT - TRANSFER	1177	11/71	۷ \ ۲
AEEC	HWT B	1462-1	BOOSTER	HEAT - TRANSFER	1177	11/71	۷ \ <u>۲</u>
AECC	HWT8	1162-4	BOOSTER	HEAT - TRANSFER	1207	08/72 REV. 01	A / N
AEDC	HW1B	1162-4	ORBITER	HEAT - TRANSFER	1207	08/72 REV. 01	A / N
AEDU	HWTB	1162-5	ORBITER	AIRLUADS	1225	01/72	V
AEDC	HWIB	1162.5	8005168	AIRLOADS	1225	91/72	4 / 2
AEDC	HWTB	1162-9	0881TER	HEAT - TRANSFER	1231	04/72	4 \ Z
AEDC	HWTB	1162-4	ORBITER	HEAT - TRANCFER	1262	06/72	4/4
AEDO	+tWTB	1162-4	LAUNCH	HEAT - TRANSFER	1262	06/72	4 \ Z
0 0 0 4	91.W+	***	BOCCTER	HEAT-TRANSFER	1262	06/72	A / A
AFLC	HWTC	~10055	BOUSTER	AFRODYNAMICS	1006	01/10	-
13.34 4	HWIF	1162-700	ORBITER	HEAT-TRANSFER	1224	04/72	4 / N
AEFC	PWT 1.5 T	7F-250	BOOSTER	AIRLOADS	1125	10/71	1.7
009व	PWT4T	10135	0881TER	AERODYNAMICS	1092	17/70	ξ.
AEDS	PWT4T	TC174-PC1154	LAUNCH	AIRLOADS	1222	02/73	27
AEDC	PWT4T	TC174-PC1154	BOOSTER	AIRLOADS	1222	02/73	JC
AEDC	SWTA	1162-F00	0A8 TER	HEAT-TRANSFER	1206	05/72	W / W

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Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

	YELD CARBOT	FASSIST NOWAER	VEHICLE	TEST DISCIPLINE	DMS-DR	PUB DATE	CODE
	· · · ·	4	LAUNCH	AERODYNAMICS	1108	07/71	18
, i		1163	HOMBAL	AIRLOADS	1174	06/72	α: +
		1163	BGOSTER	AERODYNAMICS	108	07/71	8.
)	- 1) (4) (4) (7	00.81769	AERODYNAMICS	1108	07/71	8
A .	64 3 6 4 5 7 6 7		0,48+10,8	AEPODYNAMICS	1012	02/60	A 5
ر ن نه	- k	- 50 : 72 : 4	វាគ្គ (ខ្លួន	AERODYNAMICS	1250	04/72	£.
 I U	F: \$		LAUNCH	AERODYNAMICS	1267	09/72	98
ί ά : •	E WIN	4 C -	0881168	AERODYNAMICS	1072	03/71	A.J
, u		105	BOOSTER	HEAT-TRANSFER	1179	10/71	۷ ۲
J.		105	8008168	HEAT - TRANSFER	1134	01/72	00
) (A		106	0881768	HEAT - TRANSFER	1131	01/72	00
: () ()		106	ORBITER	HEAT - TRANSFER	1180	10/71	∀ / Z
, (. . α		4 50 t	08811ER	AERODYNAMICS	1104	08/71	Ā
) (. . •		111/113	ORBITER	AERODYNAMICS	1071	03/71	Н
) (-12	BOOSTER	AERODYNAMICS	1080	04/71	AL
) (<u>.</u>		125	0681768	AERODYNAMICS	1094	01/72	×
) () () (CABITER	HEAT-TRANSFER	1252	04/72	4
) (82 K	ORBITER	AERODYNAMICS	1002	06/70	A 6
 		න න	ORBITER	AERODYNAMICS	1031	11/70	4
	1 (1 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4 (4	8 65	0RB17EP	AERODYNAMICS	1011	04/60	7 A
, C	7 8 9 9 1 M	4 % 4	ORBITER	AERODYNAMICS	1021	10/70	₽ 4
984 986	1 M20 -	£ er er	8008 FEP	AERODYNAMICS	1038	09/72 REV. 01	A A
ARC	6.63WT	486	LAUNCH	AERODYNAMICS	1038	09/72 REV. 01	∢ ∢

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Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

DATASET CODE	1	_										•••	4.		• •										
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	1040	1026	0.00	¥201	9 99	1050	1050	1065	1129	1129	1129	1116	1075	1075	1118	1028	9801	9701	1063	1121	:083	1085	1122	1112	
TEST DISCIPLINE	PODYNAMICS	AERODYNAMICS	AIRLOADS	AIRLOADS	AIRLOADS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS							
VEHICLE	LAUNCH	0881758	ORRITER	ORBITER	BONSTER	BOOSTER	LAUNCH	LAUNCH	0R8 1 TER	LAUNCH	BOOSTER	BOOSTER	LAUNCH	BOOSTER	LAUNCH	ORBITER	BOOSTER	BOOSTER	LAUNCH	BOOSTER	08817ER	HERITA	LAUNCH	ORBITER	
FACSELTY TEST NUMBER	488	503	503/513	5037513	504	505	505	508	809	509	509	510	511	511	512	514	522	522	524	528	527	ភេឌខ	546	547	
A117.001805	6 E CWT	0.6 mm	665wT	660WT	66 3WT	6.6.3WT	1W599	6.6.5WT	6 6 SWT	66SWT	665#1	66SWT	665WT	66SWT	665WT	665wT	663WT	865WT	665WT	66SWT	56.5WT	±M∪ ÷9	6.6.3WT	56 SWT	
FAC 1 L 1 TY	Ω α ∀	• ∀	ARC	ARC	POC	ARC	ARC	ARC	ARC	ARC	ARC	APC	ARC	ARC	ARC	ARÇ	ARC	AHC	ARC	CL) H	Ú 51) ()	. B.C.	

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Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

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PUB. DATE	09/72	04/72	12/71	02/72	02/72	02/72	05/72	02/72	09/72	• !	02/72	01/72	01/72	01/72	17/60	08/71		07/71	12/60	11/11	01/71	01/10			09/71	11/71	12/70	٠
DMS-DR	1127	1111	1137	1099	1136	1136	1141	1202		1267	1212	1170	1170	1170	1163	1911	-	1154	1159	1158	1053	1005		1081	1142	1167	1029	
TEST	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AFRODYNAMICS	AIRLOADS	AFRODYNAMICS	AFBOOVNAMICS		AERODYNAMICS	AERODYNAMICS	HEAT - TRANSFER	HEAT - TRANSFER	HEAT - TRANSFER	SOMMANYCOOR		AERODYNAMICS	HEAT-TRANSFER	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	SCIMANYCOOR		AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	SOLMANYCOOR	ACKOUTE TO THE
VEHICLE COMPONENT	LAUNCH	BOOSTER	LAUNCH	AUNCH	H 2				1010	LAUNCH	BOOSTER	ORBITER	BOOSTER	HONDA		E	ORBITER	ORBITER	ORBITER	BOOSTER	ORBITER		ORBITEM	ORBITER	ORBITER	ORBITER		BOOSTER
FACILLITY		o (0 4	- P	, 66	561	561	563	605	629	18-063	H/T MDAC	H.T. MDAC		H/- MUAC	022	035	017	610	050		6 · 7	280	289	000	, ,	367	247-0
SUBFACILITY	1	- P	1MS 9 9	1 ₩ S 99	6 6 SW T	66 SWT	665WT	66SWT	66SWT	97 SWT	8 T W T		10000		18496	15SWT	26TWT	3 6 HWT	36HWT	, c		7 1 0 SW 1	7 1 0 SWT	7 1 0 SWT	1		7 1 0 SW	18HWI
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Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

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PUB. DATE	0//0	03.7.	03/71			12/10	08/71	08/71	04/72	05/72	03/72	07/10	11/70	01/71	06/71	08/72	03/72 REV. 01	12/71	02/72	08/72	04/60	02/71	04/71	11/90	
DMS - DRS	1025	1052	1052	1052	1030	1039	1109	1110	1223	1221	1244	1004	1023	1048	1095	1238	1203	1214	1220	1270	1009	1059	1088	1086	
TEST DISCIPLINE	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	HEAT - TRANSFER	AERODYNAMICS	AERODYNAMICS	AERODVNAMICS	AERODYNAMICS	HEAT - TRANSFER	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AFRODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	
VEHICLE	BOOSTER	LAUNCH	ORBITER	BOOSTER	BOOSTER	BOOSTER	BOOSTER	BOOSTER	BOOSTER	ORB11ER	BOOSTER	ORBITER	ORBITER	ORBITER	ORBITER	LAUNCH	0881TER	BOOSTER	BOOSTER	0881TER	ORBITER	OR8 TER	ORBITER	ORBITER	
FACILITY TEST NUMBER	291-0	304-0	304-0	304-0	579-0	580-0	587-0	587-1	603-0	681	1-20	6315	6329	6355-6329	6366	6386-6387	6392	6397	6398	405	7341-7343	7369	7376	7377	
SUBFACILITY	4 HSWT	4 HSWT	4 HSW1	4 HSW1	8 12 SWT	8 12 SWT	8 12 SWT	8 1 2 SWT	8 1 2 SWT	20SWT	20HT6	20HT6	20HT6	20HT6	20HT6	20416	20476	20HT6	20HT6	22HT	22HT	22HT	22HT	22HT	
FACILITY	205	205	205	205	205	205	GDC	305	205	JPL	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	3841	ABC	

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Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

7. 	SUBFACILITY	E A	VEHICLE	TEST DISCIPLINE	MO - 0 M	PUB. DATE	DATASET CODE
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			20 1 3 4 12 2 0 0 0 0	1190	02/72	n M
LARC	22HT	7377-79,7380-90	80051EH		0	02/12	Ĭ.
LARC	2 2 H T	7377-79,7380-90	0A8 TEA	AERODYNAMICS	2		ā
0	2241	7377-79,7380-90	LAUNCH	AERODYNAMICS	1190	02//2	2
) # # J		7386-7390	ORBITER	AERODYNAMICS	1176	01/72	Z
LARC		0000	ORBITER	AERODYNAMICS	1211	02/72	S
LABC	2241	- 0 0 0 1	ORBITER	AERODYNAMICS	1218	06/72	90
LARC	2247	9 6 F .	ORBITER	AERODYNAMICS	1,99	05/72	×
LARC	44501)	CHBITER	AERODYNAMICS	1175	01/72	ኃ
LARC	44SPT	1	0881158	AERODYNAMICS	1171	12/71	7
LARC	4 S P T	α (σ	BOOSTER	HEAT-TRANSFER	1236	02/72	4 2
LARC	5HRNT	ъ н ж ч	OBBITER	AERODYNAMICS	1022	10/10	1.8
LARC	7 10 SWT	905		SOMMANYCOORA	1105	12/60	2
LARC	8191	573	ORB 1 1 E H		1001	06/71	O M
LARC	8191	574	ORBITER	AERODYNAMICS		12/71	 ≥
LARC	8 TPT	595	0881TER	AERODYNAMICS			. 3
	60 F	8 08	ORBITER	AERODYNAMICS	1195	12/71	Z E
		\$0 90	BOOSTER	AERODYNAMICS	1200	03/72	ZW
י א א רא א	. ← . O.	605	LAUNCH	AERODYNAMICS	1200	03/72	MZ
) () () () () () () () () () (. H	1 - 58	ORBITER	HEAT-TRANSFER	1056	01/71	۷ ۲
) V		1075-1107	LAUNCH	HEAT-TRANSFER	1143	12/90	4 / X
LARC	E 0 > 6		ROOSTER	HEAT-TRANSFER	1138	17/10	∀ \ Z
LARC	8 V D H T	1204-1213		TANA TITANAFER	1024	10/70	X / X
LARC	8 V D H T	123-136,180-188			4711	17/10	4 / X
LARC	8 V D H T	1237-1297	LAUNCH	HEAT-IMANSTER		27.20	2
LARC	BVDHT	1237-1297	BOOSTER	HEAT-TRANSFER	8		2
LARC	8 V D H T	137-146,189-205	S ORBITER	HEAT-TRANSFER	1032	0//11	c È

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Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

DATASET	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4 ·	¥ ;	4 ;	₹	V	d (t 4		: à		۷ : ۲ :	٠ ، 2 ;		4 ·		4	9 .	2	ב	6 2	07	ופ	۷ ۷	. .
B. DAT						7	27.70	06/72	10/72	03/71					2 / 2 / 2	12/70	01/71	02/21		2//10	07/71	08/71	05/71	17/20	17711
DMS-DR	1032	1032	1036	9 4 0 T	2 6	1234	1261	1261	1278	1070	1165	9101	5 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	1020	1036	1036	1047	1061			" - -	1084	1093	1146	151
TEST DISCIPLINE	RANSFER	HEAT - TRANSFER	HEAT-TRANSFER	HEAT-TRANSFER	HEAT-TRANSFER	HEAT-TRANSFER	HEAT-TRANSFER	HEAT-TRANSFER	HEAT-TRANSFER	HEAT - TRANSFER	HEAT - TRANSFER	HEAT - TRANSFER	HEAT - TRANSFER	HEAT - TRANSFER	HEAT - TRANSFER	HEAT - TRANSFER	AERODYNAMICS	AERODYNAMICS	AERODYNAMICS	AFRODYNAMICS		AERODYNAMICS	AERODYNAMICS	HEAT - TRANSFEH	AERODYNAMICS
VEHICLE	800STER	LAUNCH	BOOSTER	LAUNCH	LAUNCH	OPBITER	BOOSTER	LAUNCH	LAUNCH	BOOSTER	ORBITER	LAUNCH	ORBITER	BOOSTER	BOOSTER	LAUNCH	LAUNCH	LAUNCH	ORBITER				BOOSTER	ORBITER	ORB! TER /
FACILITY TEST NUMBER	137-146,189-205	137-146,189-205	147-179,206-322	147-179,206-322	1948-2000	1948-2000	2505-2565	2505-2565	2886-2929	703-766	823-887	50	5 1	52	53	5.3	54	\$.	61	62	63		• •	99	68/71
SUBFACILITY	8 V0H1	8 C D T	6 V D 1 T	8 V D H	8 V D H 1	8 V D H H	8 V D T T	8 V D H T	F I Q > 80	BV0H1	8 V D H T	CFHT	CFHT	CFHT	CFHT	CFHT	CFHT	CFHT	CFHT	CFHT	CFHT			CFHT	F H H
FACILITY	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	LARC	S B B) (c	LAHC	LARC

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Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

FACILITY	SUBFACILITY	FACILITY TEST NUMBER	COMPONENT	TEST DISCIPLINE	DMS-DR#	PUB DATE	DATASET CODE
1 1 1 C	CFHT	•	LAUNCH	HEAT - TRANSFER	1178	10/11	۷ ۲
) (<u>.</u>	H H G	69	0881TER	HEAT-TRANSFER	1178	10/71	4 \ Z
) (c	H	70	BOOSTER	AERODYNAMICS	1156	12/71	M
) (H H H C	7.4	LAUNCH	AERODYNAMICS	1198	01/72	¥
) (4) -	CFHT	•	BOOSTER	AERODYNAMICS	1198	01/72	ž
) (4 T	CFHT	92	0881TER	AERODYNAMICS	1194	12/71	⊙
) Q	CFHT	7.8	LAUNCH	HEAT-TRANSFER	1260	09/72	ě
- A	CFHT	980	ORBITER	AERODYNAMICS	1219	05/72	90
LARC	CFHT	88	ORBITER	AERODYNAMICS	1277	09/72	00
LARC	1191	103	ORBITER	AERODYNAMICS	1268	08/72	10
LARC	1191	2.4	BOOSTER	AERODYNAMICS	1015	04/60	۱.6
LARC	LTPT	64	0881TER	AERODYNAMICS	1018	10/70	۲,
L A R C	1101	80	ORBITER	AERODYNAMICS	1013	09/10	۲3
7 A B	1101	50-2	ORBITER	AERODYNAMICS	1045	01/71	F.
. A	1797	5.2	ORBITER	AERODYNAMICS	1049	11/71	۲3
	LTPT	545	0881758	AERODYNAMICS	1064	03/71	10
. .	LTPT	5.5	BOOSTER	AERODYNAMICS	1100	11/10	ĹĒ
LARC	LTPT	5.7	ORBITER	AERODYNAMICS	1106	07/71	S.
9	1101	8.8	ORBITER	AERODYNAMICS	1107	06/71	ž
		59	BOOSTER	AERODYNAMICS	1087	07/71	۲s
) (6.2	ORBITER	AERODYNAMICS	1149	08/71	¥
2 4		6.3	ORBITER	AERODYNAMICS	1157	09/71	© ∑
) (d	1 TPT	•	ROOSTER	AERODYNAMICS	1150	10/71	O M
CARC	LTPT	6.5	0881768	AERODYNAMICS	1168	11/71	¥ 2

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Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

\$\text{1169} \tag{04/72}\$ \$\text{1172} \tag{12/71}\$ \$\text{1193} \tag{05/72}\$ \$\text{1193} \tag{05/72}\$ \$\text{1193} \tag{05/72}\$ \$\text{1232} \tag{06/72}\$ \$\text{1232} \tag{04/72}\$ \$\text{1233} \tag{04/72}\$ \$\text{1233} \tag{04/72}\$ \$\text{1233} \tag{04/72}\$ \$\text{1019} \tag{09/70}\$ \$\text{1019} \tag{09/70}\$ \$\text{1098} \tag{06/71}\$ \$\text{1098} \tag{06/71}\$ \$\text{1098} \tag{06/71}\$ \$\text{1098} \tag{06/71}\$ \$\text{1197} \tag{03/72}\$ \$\text{1197} \tag{03/72}\$	FACILITY	SUBFACILITY	FACILITY TEST NUMBER	VEHICLE COMPONENT	TEST DISCIPLINE	DMS-DR.	B. DAT	DATASET
PT 71 ORBITER AERODVNAMICS 1172 12771 PT 72 ORBITER AERODVNAMICS 1193 05/72 PT 73 BOOSTER AERODVNAMICS 1193 05/72 PT 75 ORBITER AERODVNAMICS 1193 05/72 PT 77 ORBITER AERODVNAMICS 1235 06/72 PT 86 / 86 ORBITER AERODVNAMICS 1233 04/72 PT 87 ORBITER AERODVNAMICS 1017 10/70 L PT 913 BOOSTER AERODVNAMICS 1019 09/70 L PT 9143 BOOSTER AERODVNAMICS 1019 09/70 L PT 9143 BOOSTER AERODVNAMICS 1019 09/70 L PT 944 ORBITER AERODVNAMICS 1101 06/71 M PT 945 ORBITER AERODVNAMICS 1096 06/71 M		LTPT	63	ORBITER	•		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
PT 72 ORBITER AERODYNAMICS 1229 05/72 PT 73 BOOSTER AERODYNAMICS 1193 05/72 PT 75 ORBITER AERODYNAMICS 1189 12/71 PT 85/88 ORBITER AERODYNAMICS 1232 06/72 PT 86/88 ORBITER AERODYNAMICS 1235 04/72 PT 86/88 ORBITER AERODYNAMICS 1233 04/72 PT 886 BOOSTER AERODYNAMICS 1017 10/70 VIT 9143 BOOSTER AERODYNAMICS 1017 10/70 VIT 942 ORBITER AERODYNAMICS 1103 05/71 M VIT 945 ORBITER AERO		LTPT	1.2	ORB I TER	AERODYNAMICS	20 e 0 e 	04/72	ī
PT 73 BOOSTER AERODYNAMICS 1193 05/72 PT 75 ORBITER AERODYNAMICS 1189 12/71 PT 77 ORBITER AERODYNAMICS 1232 06/72 PT 85 ORBITER AERODYNAMICS 1235 04/72 PT 87 ORBITER AERODYNAMICS 1239 04/72 PT 886 BOOSTER AERODYNAMICS 1017 10/70 VI 9143 BOOSTER AERODYNAMICS 1019 09/70 VI 942 ORBITER AERODYNAMICS 1069 05/71 M VI 942 ORBITER AERODYNAMICS 1069 05/71 M VI 942 ORBITER AERODYNAMICS 1101 06/71 M VI 942 ORBITER AERODYNAMICS 1109 06/71 M VI 944 BOOSTER HEAT-TRANSFER 1096 06/71 M V		LTPT	7.2	ORBITER	AERODYNAMICS	· · ·	12/71	ž
PT 75 ORBITER AERODYNAMICS 1189 12/71 PT 65 ORBITER AERODYNAMICS 1232 06/72 PT 65 ORBITER AERODYNAMICS 1239 04/72 PT 66/86 ORBITER AERODYNAMICS 1233 04/72 PT 686 BOOSTER AERODYNAMICS 1017 10/70 10/72 VI 9143 BOOSTER AERODYNAMICS 1019 09/70 1 VI 9143 BOOSTER AERODYNAMICS 1019 09/71 I VI 9143 BOOSTER AERODYNAMICS 1069 05/71 I VI 9143 BOOSTER AERODYNAMICS 1069 05/71 I VI 942 ORBITER AERODYNAMICS 1079 05/71 I VI 942 ORBITER AERODYNAMICS 1103 05/71 I VI 945 BOOSTER AERODYNAMICS 1104 05/7		LTPT	7.3	BOOSTER	AERODYNAMICS	677-	05/72	01
PT 77 ORBITER AERODYNAMICS 1232 06/72 PT 86 ORBITER AERODYNAMICS 1239 04/72 PT 86/88 ORBITER AERODYNAMICS 1239 04/72 PT 86 BOOSTER AERODYNAMICS 1017 10/70 VI 913 BOOSTER AERODYNAMICS 1019 09/70 VI 9143 BOOSTER AERODYNAMICS 1019 09/70 VI 9143 BOOSTER AERODYNAMICS 1068 05/71 VI 9143 BOOSTER AERODYNAMICS 1070 09/70 VI 9143 BOOSTER AERODYNAMICS 1068 05/71 N VI 942 ORBITER AERODYNAMICS 1060 03/71 N VI 945 LAUNCH HEAT-TRANSFER 1096 06/71 N VI 945 LAUNCH HEAT-TRANSFER 1096 06/71 N VI 945<		LIPT	2.5	ORB 1 TER	AERODYNAMICS	7 (h	05/72	> X
10 10 10 10 10 10 10 10		LTPT	11	ORBITER	AERODYNAMICS	981	12/71	Z Z
PT 86/88 ORBITER AERODYNAMICS 1239 04/72 VI 913 ORBITER AERODYNAMICS 1017 10/70 VI 913 BOOSTER AERODYNAMICS 1019 09/70 VI 9143 BOOSTER AERODYNAMICS 1089 05/71 1 VI 9143 BOOSTER AERODYNAMICS 1068 05/71 1 VI 942 ORBITER AERODYNAMICS 1069 05/71 1 VI 942 ORBITER AERODYNAMICS 1173 12/71 N VI 945 BOOSTER AERODYNAMICS 1173 12/71 N VI 945 BOOSTER HEAT-TRANSFER 1096 06/71 N VI 945 LAUNCH HEAT-TRANSFER 1096 06/71 N VI 945 ORBITER AERODYNAMICS 1144 09/71 M VI 9518 ORBITER AERODYNAMICS 1109		LTPT	S &	ORBITER	AERODYNAMICS	12.15	06/72	60 6
PT 87 ORBITER AERODYNAMICS 1233 04/72 VI 913 BOOSTER AERODYNAMICS 1017 10/70 VI 9143 BOOSTER AERODYNAMICS 1019 09/70 VI 9143 BOOSTER AERODYNAMICS 1068 05/71 VI 942 ORBITER AERODYNAMICS 1069 05/71 VI 942 ORBITER AERODYNAMICS 1173 12/71 VI 945 ORBITER AERODYNAMICS 1173 12/71 VI 945 BOOSTER AERODYNAMICS 1173 12/71 VI 945 BOOSTER HEAT-TRANSFER 1098 06/71 VI 945 ORBITER AERODYNAMICS 1096 05/71 VI 951 ORBITER AERODYNAMICS 1103 06/71 V 952 ORBITER AERODYNAMICS 1103 06/71 V 952 ORBITER AERODYNAMICS 1103 <td></td> <td>LTPT</td> <td>86/88</td> <td>0RB17ER</td> <td>AERODYNAMICS</td> <td>1239</td> <td>04/72</td> <td>5 6</td>		LTPT	86/88	0RB17ER	AERODYNAMICS	1239	04/72	5 6
VI 886 BOOSTER AERODYNAMICS 1017 10/70 VI 913 BOOSTER AERODYNAMICS 1019 09/70 VI 9143 BOOSTER AERODYNAMICS 1068 05/71 VI 942 ORBITER AERODYNAMICS 1173 12/71 VI 942 ORBITER AERODYNAMICS 1173 12/71 VI 945 ORBITER AERODYNAMICS 1101 06/71 VI 945 BOOSTER HEAT-TRANSFER 1098 06/71 VI 945 LAUNCH HEAT-TRANSFER 1098 06/71 VI 945 ORBITER AERODYNAMICS 1103 06/71 VI 951 ORBITER AERODYNAMICS 1103 06/71 VI 952 ORBITER AERODYNAMICS 1103 06/71 VI 952 ORBITER AERODYNAMICS 1103 06/71 VI 952 ORBITER AERODYNAMICS 1103<		LTPT	8.7	ORBITER	AERODYNAMICS	1233	04/72	ני
VI 913 BOOSTER AERODYNAMICS 1019 09/70 VI 9143 BOOSTER AERODYNAMICS 1068 05/71 VI 922 ORBITER AERODYNAMICS 1068 03/71 VI 942 ORBITER AERODYNAMICS 1173 12/71 VI 945 ORBITER AERODYNAMICS 1173 12/71 VI 945 BOOSTER HEAT-TRANSFER 1098 06/71 VI 945 LAUNCH HEAT-TRANSFER 1096 05/71 VI 945 ORBITER AERODYNAMICS 1144 09/71 VI 945 ORBITER AERODYNAMICS 11096 05/71 VI 951B ORBITER AERODYNAMICS 11144 09/71 VI 955 ORBITER AERODYNAMICS 1103 06/71 VI 955 UAUNCH AERODYNAMICS 1197 03/72		UPWI	886	BOOSTER	AERODYNAMICS	1017	10/70	} =
### 9143 BOOSTER AERODYNAMICS 1068 05/71 ####################################		UPWI	913	BOOSTER	AERODYNAMICS	91.01		.
9143 BOOSTER AERODYNAMICS 1068 03/71 942 ORBITER AERODYNAMICS 1069 03/71 942 ORBITER AERODYNAMICS 1101 06/71 945 BOOSTER HEAT-TRANSFER 1098 06/71 945 ORBITER HEAT-TRANSFER 1098 06/71 951 ORBITER AERODYNAMICS 1104 09/71 955 ORBITER AERODYNAMICS 1103 06/71 956 LAUNCH AERODYNAMICS 1103 06/71 962 BOOSTER AERODYNAMICS 1197 03/72 N		UPWT	9143	BOOSTER	AERODYNAMICS	9 6		
1 922 ORBITER AERODYNAMICS 1069 03771 1 942 ORBITER AERODYNAMICS 1173 12/71 1 945 ORBITER AERODYNAMICS 1101 06/71 1 945 BOOSTER HEAT-TRANSFER 1098 06/71 1 945 ORBITER HEAT-TRANSFER 1098 06/71 1 945 ORBITER AERODYNAMICS 1096 05/71 1 951 ORBITER AERODYNAMICS 1144 09/71 1 955 ORBITER AERODYNAMICS 1103 06/71 1 952 LAUNCH AERODYNAMICS 1197 03/72 1 962 BOOSTER AERODYNAMICS 1197 03/72		UPWT	9143	BOOSTER	AERODYNAMICS			균 ;
1 942 ORBITER AERODYNAMICS 1173 12/71 T 944/961 ORBITER AERODYNAMICS 1101 06/71 T 945 BOOSTER HEAT-TRANSFER 1098 06/71 T 945 CAUNCH HEAT-TRANSFER 1098 06/71 T 951 ORBITER HEAT-TRANSFER 1098 06/71 T 951B ORBITER AERODYNAMICS 1104 09/71 F 954B ORBITER AERODYNAMICS 1103 06/71 F 962 LAUNCH AERODYNAMICS 1103 06/71 F 962 LAUNCH AERODYNAMICS 1197 03/72 F 962 LAUNCH AERODYNAMICS 1197 03/72		UPWT	922	ORBITER	AERODYNAMICS	690		J .
944/961 ORBITER AERODYNAMICS 1101 06/71 945 BOOSTER HEAT-TRANSFER 1098 06/71 945 LAUNCH HEAT-TRANSFER 1098 06/71 951 ORBITER HEAT-TRANSFER 1098 06/71 951 ORBITER AERODYNAMICS 1144 09/71 952 LAUNCH AERODYNAMICS 1197 03/72 N		UPWT	942	ORBITER	AERODYNAMICS	1173		5 ,
### BOOSTER HEAT-TRANSFER 1098 06/71 ### PAS LAUNCH HEAT-TRANSFER 1098 06/71 #### PAS ORBITER HEAT-TRANSFER 1098 06/71 #### PAS ORBITER AERODYNAMICS 1096 05/71 #### PASS ORBITER AERODYNAMICS 1103 06/71 #### PASS ORBITER AERODYNAMICS 1197 03/72 #### PASS BOOSTER AERODYNAMICS 1197 03/72 #### PASS BOOSTER AERODYNAMICS 1197 03/72		UPWT	944/961	ORBITER	AERODYNAMICS	, ,	17/21	¥
LAUNCH HEAT-TRANSFER 1098 06/71 1 945 CABITER HEAT-TRANSFER 1098 06/71 951 ORBITER AERODYNAMICS 1104 09/71 952 CABITER AERODYNAMICS 1103 06/71 962 BOOSTER AERODYNAMICS 1197 03/72 1 945			945	BOOSTER		-	06/71	Z
T 945 ORBITER HEAT-TRANSFER 1098 06/71 T 951B ORBITER AERODYNAMICS 1096 05/71 ORBITER AERODYNAMICS 1103 06/71 F 955 ORBITER AERODYNAMICS 1103 06/71 962 LAUNCH AERODYNAMICS 1197 03/72 a			945		X 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	80	06/71	٧ / X
951 ORBITER HEAT-TRANSFER 1098 06/71 951 ORBITER AERODYNAMICS 1104 09/71 955 ORBITER AERODYNAMICS 1103 06/71 962 LAUNCH AERODYNAMICS 1197 03/72 a			9 4 0		HEAT - TRANSFER	1098	06/71	W / N
9518 ORBITER AERODYNAMICS 1096 05/71 7 9518 ORBITER AERODYNAMICS 1103 06/71 7 962 LAUNCH AERODYNAMICS 1197 03/72				ORBITER	HEAT - TRANSFER	8601	12/90	N/A
9518 ORBITER AERODYNAMICS 1144 09/71 955 ORBITER AERODYNAMICS 1103 06/71 962 LAUNCH AERODYNAMICS 1197 03/72 962 800STER AERODYNAMICS 1197 03/72			951	ORBITER	AERODYNAMICS	1096	05/71	<u>a</u>
955 ORBITER AERODYNAMICS 1103 06/71 962 LAUNCH AERODYNAMICS 1197 03/72 962 800STER AERODYNAMICS 1197 03/72			9518	OPBITER	AERODYNAMICS	1144	12/60	, <u>,</u>
962 LAUNCH AERODYNAMICS 1197 03/72 962 BOOSTER AERODYNAMICS 1197 03/72			955	ORBITER	AERODYNAMICS	1103	06/71	
962 BOOSTER AERODYNAMICS 1197 03/72			962	LAUNCH	AERODYNAMICS	1197	03/72	v i
			962		AERODYNAMICS	1197	03/72	

Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

FACILITY	SUBFACILITY	FACILITY TEST NUMBER	VEHICLE	TEST DISCIPLINE	DMS-DR#	PUB DATE	DATASET
1 1 1 1 1	1		ORBITER	AERODYNAMICS	1117	09/71	r,
LARC	TW9U	5 Q F	BOOSTER	AERODYNAMICS	1117	11/60	L.B.
LARC	Mdf)	ე € ₩ ₩	LAUNCH	AERODYNAMICS	1117	1 / / 60	r B
LARC	M 40	n 49	0881TER	AERODYNAMICS	1196	01/72	Z
LARC	M (1)	0,400	ORB 1 TER	AERODYNAMICS	1216	05/72	0
LARC	M40	1 1 1 1 1 1 1 1 1	LAUNCH	AERODYNAMICS	1237	05/72	90
)	* A4 60 5	99	ORBITER	AERODYNAMICS	1237	05/72	90
AR (3 10 10 10 10 10 10 10 10 10 10 10 10 10	ກ ແ ກ ຜ	BOOSTER	AERODYNAMICS	1237	05/72	90
LAHC	1 W 4 D	9967	LAUNCH	HEAT-TRANSFER	1263	09/72 REV. ▲	ช
		න ග	ORBITER	AERODYNAMICS	1232	06/72	60
ר אול	A B C C C C C C C C C C	026	ORBITER	AERODYNAMICS	1235	05/72	၁၀
LARC	3 10 11	0 0	ORBITER	AERODYNAMICS	1258	05/72	OF
LARC	- Man	n •	PONCH	AERODYNAMICS	1265	01/13	P
LARC	LW4U	- 20.56	0881188	AERODYNAMICS	1147	12/60	ME
LARC	V/STOL	, OU	HONE	AEBODYNAMICS	1058	02/71	Ŧ
۲۱ ۷	HOWI			SOLMANYCOGRA	1115	08/71	cn
110	HSWI	င က ဟ	K3-19H0	4 N N N N N N N N N N N N N N N N N N N	1115	08/71	ລວ
רוא	HSWI	8-30	BOOSIER			17/80	23
110	HSWI	8-30	LAUNCH	AERODYNAMICS	<u>c</u>		: :
MAC	LSWT	132	BOOSTER	AERODYNAMICS	- 0	0 / 0	3 8
MAC	LSWT	1351	BOOSTER	AERODYNAMICS	1035	12/70	ຍ
) (I Mo	138	ORBITER	AERODYNAMICS	1074	04/71	Z O
		e ::	ORBITER	AERODYNAMICS	1001	08/10	5
) (E 2	3 0	235	ORBITER	AERODYNAMICS	1040	12/70	63
J OK	LAS 1	237	0AB TER	AERODYNAMICS	1090	17/50	00
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Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

FACILITY	SUBFACILITY	FACILITY TEST NUMBER	VEHICLE	DISCIPLINE	DMS-DR	PUB. DATE	DATASET CODE
∀	LSWT	239	BOOSTER	AERODYNAMICS	1054	02/71	S S
MAC	LSWT	240	ORB 1 TER	AERODYNAMICS	1041	01/71	CF
MAC	LSWT	248	ORBITER	AERODYNAMICS	1067	03/71	CP
MAC	LSWT	549	BOOSTER	AERODYNAMICS	1017	04/71	Ç
MA C	LSWT	258	BOOSTER	AERODYNAMICS	1120	08/71	20
MDAC	4 TWT	S-122	LAUNCH	AERODYNAMICS	1230	11/72	20
MDAC	4 T.W.T	5-222	BOOSTER	AERODYNAMICS	1230	11/72	10
MDAC	4 TWT	8-222	ORBITER	AERODYNAMICS	1230	11/72	20
MSFC	14TWT	451	BOOSTER	AERODYNAMICS	1001	06/70	6
O H S M	1 4 TWT	453	ORBITER	AERODYNAMICS	1003	01/10	17
MSFC	1 4 TWT	466	LAUNCH	AERODYNAMICS	1051	03/71	2.2
MSFC	1 4 TWT	466	BOOSTER	AERODYNAMICS	1051	03/71	2.2
MSFC	14TWT	468	ORBITER	AERODYNAMICS	1027	10/70	2.1
MOFC	14 TWT	470	LAUNCH	AERODYNAMICS	1044	02/71	2.4
MSFC	14TWT	121	ORBITER	AERODYNAMICS	1043	02/71	23
O #S₽	1 4 TWT	476	LAUNCH	AERODYNAMICS	1055	02/71	2.5
MSFC	14TWT	477	ORBITER	AERODYNAMICS	1 1 4	17/60	26
S F C	14 TWT	478	ORBITER	AERODYNAMICS	1076	04/71	2.7
MSFC	1 4 TWT	481	BOOSTER	AERODYNAMICS	1102	03/72	28
MSFC	14TWT	484	ORBITER	AERODYNAMICS	1126	1 2 / 60	29
MSFC	1 4 TWT	485	LAUNCH	AERODYNAMICS	1601	05/71	30
MSFC	1 4 TW T	489	LAUNCH	AERODYNAMICS	6111	12/10	3.7
MSFC	14 TWT	490	LAUNCH	AERODYNAMICS	1130	03/72	32
MSFC	14TWT	06.	BOOSTER	AERODYNAMICS	1130	03/72	32

Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

R AERODYNAMICS 1140 R AERODYNAMICS 1148 R AERODYNAMICS 1152 R AERODYNAMICS 1153 R AERODYNAMICS 1160 R AERODYNAMICS 1162 R AERODYNAMICS 1162 R AERODYNAMICS 1162 H AERODYNAMICS 1162 H AERODYNAMICS 1187 H AERODYNAMICS 1188 H AERODYNAMICS 1182 H AERODYNAMICS 1183 ER AERODYNAMICS 1183 H AERODYNAMICS 1183 ER AERODYNAMICS 1185 ER AERODYNAMICS 1186 ER AERODYNAMICS <th>SUBFACILITY</th> <th>FACILITY VEHICLE TEST NUMBER COMPONENT</th> <th>TEST DISCIPLINE</th> <th>DMS - DR</th> <th>PUB. DATE</th>	SUBFACILITY	FACILITY VEHICLE TEST NUMBER COMPONENT	TEST DISCIPLINE	DMS - DR	PUB. DATE
AERODYNAMICS 1148 09/71 3 AERODYNAMICS 1152 09/71 3 AERODYNAMICS 1152 09/71 3 AERODYNAMICS 1153 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1187 07/72 4 AERODYNAMICS 1187 07/72 4 AERODYNAMICS 1188 02/72 AERODYNAMICS 1181 01/72 AERODYNAMICS 1182 02/72 AERODYNAMICS 1183 10/71 AERODYNAMICS 1183 10/71 AERODYNAMICS 1183 02/72 AERODYNAMICS 1183 02/72 AERODYNAMICS 1183 02/72 AERODYNAMICS 1184 06/72 AERODYNAMICS 1185	167	LAUNCH	AERODYNAMICS	1140	08/71
AERODYNAMICS 1148 09/71 3 AERODYNAMICS 1152 09/71 3 AERODYNAMICS 1153 10/71 3 AERODYNAMICS 1160 10/72 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1187 07/72 4 AERODYNAMICS 1187 07/72 4 AERODYNAMICS 1181 01/72 4 AERODYNAMICS 1182 02/72 4 AERODYNAMICS 1182 02/72 4 AERODYNAMICS 1183 10/71 4 AERODYNAMICS 1183 10/71 4 AERODYNAMICS 1183 02/72 AERODYNAMICS 1183 02/72 AERODYNAMICS 1184 06/72 AERODYNAMICS 1185	492	BOOSTER	AERODYNAMICS	1148	11/60
AERODYNAMICS 1152 09/71 3 AERODYNAMICS 1155 09/71 3 AERODYNAMICS 1160 10/72 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1166 09/71 4 AERODYNAMICS 1187 07/72 4 AERODYNAMICS 1187 07/72 4 AERODYNAMICS 1181 01/72 0 AERODYNAMICS 1182 02/72 AERODYNAMICS 1183 10/71 AERODYNAMICS 1183 10/71 AERODYNAMICS 1183 02/72 AERODYNAMICS 1183 02/72 AERODYNAMICS 1184 06/72 AERODYNAMICS 1184 06/72 AERODYNAMICS 1183 10/71 AERODYNAMICS 1185 02/72 AERODYNAMICS 1185	492	LAUNCH	AERODYNAMICS	1148	09/71
AERODYNAMICS 1153 10/71 3 AERODYNAMICS 1155 09/71 3 AERODYNAMICS 1160 10/72 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1187 07/72 4 AERODYNAMICS 1187 07/72 4 AERODYNAMICS 1182 02/72 6 AERODYNAMICS 1183 10/71 4 AERODYNAMICS 1183 10/71 6 AERODYNAMICS 1183 10/71 6 AERODYNAMICS 1183 10/71 6 AERODYNAMICS 1183 02/72 6 AERODYNAMICS 1186 02/72 6 AERODYNAMICS 1183 02/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1186 02/72 AERODYNAMICS 1186	493	BOOSTER	AERODYNAMICS	1152	09/71
AERODYNAMICS 1155 09/71 3 AERODYNAMICS 1160 10/72 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1166 09/71 4 AERODYNAMICS 1187 07/72 4 AERODYNAMICS 1188 02/72 4 AERODYNAMICS 1182 02/72 4 AERODYNAMICS 1183 10/71 4 AERODYNAMICS 1183 10/71 4 AERODYNAMICS 1183 02/72 4 AERODYNAMICS 1184 06/72 6 AERODYNAMICS 1185 02/72 6 AERODYNAMICS 1185 02/72 6 AERODYNAMICS 1185 02/72 6 AERODYNAMICS 1186 02/72 6 AERODYNAMICS 1185 02/72 6	767	ORBITER	AERODYNAMICS	1153	10/11
AERODYNAMICS 1160 10/72 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1201 03/72 4 AERODYNAMICS 1187 07/72 4 AERODYNAMICS 1187 07/72 4 AERODYNAMICS 1181 01/72 6 AERODYNAMICS 1182 02/72 6 AERODYNAMICS 1183 10/71 6 AERODYNAMICS 1183 10/71 6 AERODYNAMICS 1183 10/71 6 AERODYNAMICS 1184 06/72 AERODYNAMICS 1185 02/72	495	BOOSTER	AERODYNAMICS	1155	09/71
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AERODYNAMICS 1162 10/71 3 AERODYNAMICS 1201 03/72 4 AERODYNAMICS 1187 07/72 6 AERODYNAMICS 1187 07/72 6 AERODYNAMICS 1181 01/72 6 AERODYNAMICS 1182 02/72 6 AERODYNAMICS 1183 10/71 6 AERODYNAMICS 1183 10/71 6 AERODYNAMICS 1184 06/72 6 AERODYNAMICS 1185 02/72 6 AERODYNAMICS 1185 02/72 6 AERODYNAMICS 1185 02/72 6 AERODYNAMICS 1185 02/72 6 AERODYNAMICS 1186 11/71 6	164	LAUNCH	AERODYNAMICS	1162	10/11
AERODYNAMICS 1201 03/72 AERODYNAMICS 1166 09/71 AERODYNAMICS 1187 07/72 AERODYNAMICS 1188 02/72 AERODYNAMICS 1181 01/72 AERODYNAMICS 1182 02/72 AERODYNAMICS 1183 10/71 AERODYNAMICS 1183 10/71 AERODYNAMICS 1184 06/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1185 02/72 R AERODYNAMICS 1186 11/71	164	ORBITER	AERODYNAMICS	1162	10/11
AERODYNAMICS 1166 09/71 AERODYNAMICS 1187 07/72 R AERODYNAMICS 1188 02/72 AERODYNAMICS 1181 01/72 R AERODYNAMICS 1182 02/72 R AERODYNAMICS 1183 10/71 FR AERODYNAMICS 1183 10/71 FR AERODYNAMICS 1184 06/72 FR AERODYNAMICS 1185 02/72	£ €	ORBITER	AERODYNAMICS	1201	03/72
AERODYNAMICS 1187 07/72 AERODYNAMICS 1187 07/72 AERODYNAMICS 1188 02/72 AERODYNAMICS 1181 01/72 AERODYNAMICS 1182 02/72 AERODYNAMICS 1183 10/71 AERODYNAMICS 1183 10/71 AERODYNAMICS 1184 06/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1185 02/72	501	LAUNCH	AERODYNAMICS	1166	12/60
AERODYNAMICS 1187 07/72 AERODYNAMICS 1188 02/72 AERODYNAMICS 1181 01/72 AERODYNAMICS 1182 02/72 AERODYNAMICS 1183 10/71 AERODYNAMICS 1183 10/71 AERODYNAMICS 1185 02/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1186 11/71	502	LAUNCH	AERODYNAMICS	1187	07/72
AERODYNAMICS 1188 02/72 AERODYNAMICS 1181 01/72 AERODYNAMICS 1182 02/72 AERODYNAMICS 1183 10/71 R AERODYNAMICS 1183 10/71 R AERODYNAMICS 1184 06/72 R AERODYNAMICS 1185 02/72 R AERODYNAMICS 1185 02/72 R AERODYNAMICS 1185 02/72 R AERODYNAMICS 1186 11/71	505	JABITER	AERODYNAMICS	1187	07/72
AERODYNAMICS 1181 01/72 AERODYNAMICS 1182 02/72 R AERODYNAMICS 1183 10/71 R AERODYNAMICS 1183 10/71 R AERODYNAMICS 1184 06/72 R AERODYNAMICS 1185 02/72 R AERODYNAMICS 1185 02/72 R AERODYNAMICS 1186 11/71	503	LAUNCH	AERODYNAMICS	1188	02/72
AERODYNAMICS 1182 02/72 R AERODYNAMICS 1183 10/71 R AERODYNAMICS 1183 10/71 R AERODYNAMICS 1184 06/72 R AERODYNAMICS 1185 02/72 R AERODYNAMICS 1185 02/72 R AERODYNAMICS 1186 11/71	3 4 0 5	AUNCH	AERODYNAMICS	1181	01/72
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AERODYNAMICS 1183 10/71 R AERODYNAMICS 1184 06/72 R AERODYNAMICS 1185 02/72 R AERODYNAMICS 1185 02/72 R AERODYNAMICS 1185 11/71	505	ABITER	AERODYNAMICS	1182	02/72
AERODYNAMICS 1183 10/71 AERODYNAMICS 1184 06/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1186 11/71	3 908	AUNCH	AERODYNAMICS	1183	10/11
AERODYNAMICS 1184 06/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1186 11/71	506	BOOSTER	AERODYNAMICS	1183	10/71
AERODYNAMICS 1185 02/72 AERODYNAMICS 1185 02/72 AERODYNAMICS 1186 11/71)R811ER	AERODYNAMICS	1 184	06/72
AERODYNAMICS 1185 02/72 AERODYNAMICS 1186 11/71	503	LAUNCH	AERODYNAMICS	1185	02/72
AERODYNAMICS 1186 11/71	603	ORBITER	AERODYNAMICS	1185	02/72
	510	ORBITER	AERODYNAMICS	1186	11/71

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Space Shuttle Phase B Facility Wind Tunnel Summary Table 5 - Continued

FACILITY	SUBFACILITY	FACILITY TEST NUMBER	VEHICLE		DMS-DR#	PUB DATE	DATASET CODE
MSFC	1.4.T.W.T	512	BOOSTER	ERODYNAM	1 4 6		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
O	14TWT	512	LAUNCH	AERODYNAMICS	1021	12//1	9 .
MSFC	1 4 TWT	513	BOOSTER	AERODYNAMICS	1001	7.77	20
MSFC	1 4 TWT	514	BOOSTER	AERODYNAMICS	0101		e (
MSFC	14 TWT	514	LAUNCH	AERODYNAMICS	01.61	2//20	eo vo
MSFC	14 TWT	517	LAUNCH	AERODYNAMICS	1213	02772	ac u
MSFC	1 4 T.W.T	517	BOOSTER	AERODYNAMICS	1213	02/72	e w
MOFC.	1 4 TW T	518	BOOSTER	AERODYNAMICS	1208	01/72) u
MSF.C	14TWT	521	BOOSTER	AERODYNAMICS	1226	05/72	, v
OHOM	1 4 TWT	523	LAUNCH	AERODYNAMICS	1227		3 5
MOFC	1 4 TWT	523	BOOSTER	AERODYNAMICS	1227	2 (2)	à :
MSFC	1.4.T.W.T	524	BOOSTER	AERODYNAMICS	1240	27720	· s
MSFC	14TWT	526	BOOSTER	AERODYNAMICS	1242	21/20	n .
MSFC	14TWT	528	ORBITER	AERODYNAMICS	1 243	03770	- (
MSFC	1.4 TWT	529	BOOSTER	AERODYNAMICS	1245	27.75	70 4
MSFC	14 TWT	531	LAUNCH	AERODYNAMICS	1241	2//20	7 G
MSFC	1.4 TWT	534	LAUNCH	AERODYNAMICS	1249	04/72	; v
MOFIC C	1 A TWT	538	LAUNCH	AERODYNAMICS	1251	04/72) u
MSFC	1 4 TWT	540	LAUNCH	AIRLOADS	1259	01/73	2 6
MSFC	1 4 TWT	540	ORBITER	AIRLOADS	1259	2/10	- -
MSFC	14 TWT	541	BOOSTER	AERODYNAMICS	1253	22/60	
MSFC	14TWT	542	ORBITER	AERODYNAMICS	1254	08/72	9 g
MSFC	1 4 T W T	543	LAUNCH	AIRLOADS	1255	03/73	, c
MSFC	14 TWT	544	LAUNCH	AERODYNAMICS	1256	08/72	2 -

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Table 5 - Continued Space Shuttle Phase B Facility Wind Tunnel Summary

	SUBFACILITY	FACILITY TEST NUMBER	VEHICLE	TEST DISCIPLINE	DMS-DR*	PUBL DATE	CODE
		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-	AERODYNAMICS	1272	10/72	
MSFC	1 4 TWT	υ 4. Χ Χ		AIRLOADS	1273	01/73	7.3
MSFC	1.4.T.W.T	550		AFRODYNAMICS	1274	09/72	7.
MSFC	1 4 TWT	551	048118HO	AFBODYNAMICS	1010	08/10	V
NALAD	LSWT	629	0461164	A FRODYNAMICS	1037	01/71	S 2
NPLAU	LSWT	630	048 - 64	AERODYNAMICS	1034	11/70	90
NALAD	LSWT	632	CAST LES	AERODYNAMICS	1124	11/10	ដ
NALAD	LSWT	633	GASSER	AERODYNAMICS	1139	10/11	X 2
NSRDC	7 10 TWT	3110	8003-50	AERODYNAMICS	1164	02/72	E Z
NSADC	7 1 0 T W T	3210	1215000 1215000 1215000	AERODYNAMICS	1192	05/72	Z
NSRDC	7.10 TWT	3310	60031CA	AERODYNAMICS	1057	02/71	63
T A M	TIOSWI	S-18/S-35		AFRODYNAMICS	1062	02/71	67
MAT	7.10SWT	8C E - 53	ORBITER	AFBODYNAMICS	1073	04/71	62
TAM	710SWT	5-39	ORBITER	AFRODYNAMICS	1060	03/71	99
TAM	7.10SWT	5-8-1		AFBODYNAMICS	1205	10/12	
T A M	7 10 SWT	5-8-2	ORBITER	80.348	1008	08/10	
T A M	7 10 SWT	ا ا	ORBITER	SC New York	1033	12/70	
T A M	7 1 0 SWT	> : x x - S	BOOSTER	AEBODYNAMICS	1228	06/72	
180	BASWT	553	BOOSTEH	AFEODYNAMICS	1276	09/72	
18C	B 4 SW1	557	80051EH		1275	11/72	
180	BASWT	557	BOOSIER		1128	08/72	
180	BASWI	558	80031EN		1191	02/72	
18C	BTWT	1265	BOOSTER		1228	06/72	
8 0	BIWI	1273	BOOSTER		1276	09/72	
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Space Shuttle Phase B Facility Wind Tunnel Summary Table 5 - Concluded

DATASET CODE	• • • •	8 0 O	10
DMS-DR# .PUB .DATE		7	07 / 7 1 REV 01
DMS-DR#	1275		n 5
TEST	AERODYNAMICS	AERODYNAMICS	
COMPONENT	BOOSTER	BOOSTER	
FACILITY TEST NUMBER	1282	1021	
SUBFACILITY	BTWT	8 1 2 SWT	
P - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	18 C	ΜΩ	

TABLE 6.3

SPACE SHUTTLE PHASE B DIGITAL DATABASE LAUNCH AERODYNAMICS

FILE #	всс	B-CONTRA	осс	O-CONTRA	DR#	2-CHAR CODE	# D/S's	# RECORDS
1 2	<u>B1</u>		02/03 02	MDAC	1065 1108	AB T8	132 882	1618 9691
3	Y	MDAC/MMC			1118 1117	AC LR	144 154	1837 1721
5 6	B1/B3 <u>B1</u>	₩		GAC	1190 1148	MU 34	16	225 1417
7 3	V	MDAC.	₩	MDAC	1099	43 50	24 12 41	265 145 560
9 10	B2 B2/B3	GD/C	<u>Ø2</u>	MSC.	1204 1210 1230	50 58 D7	76 1051	913 13235
11 12	<u>B2</u>	MDAC MSFC		LMSC_	1256 1272	71	88	1233 869
13 14 15				MSC	1241 1249	60 65	44 24	397 337
16					1251 1265	66 øн	26 21	365 295
18		NR NR		∀ NR	1267 1185	51	120 26	1681 313 505
20		TBC MSFC	V Ø4	MSC GAC	1227	57 46	36 16 99	193 1219
22 23	B3/B4	GD/C	Ø2/Ø3 <u>Ø2</u>	NR T	1052 1127 1130	CA AZ 32	55 140	606
24 25				MSC	1237 1213	ØB 56	26 42	365 589
26	B3/B4		<u>02/03</u>	MSC MSC/MDAC	1115	CU	104 227	1249 2569
28 29 30	<u>B3</u>	MSC/MDAC TBC MDAC	Ø2/Ø4 Ø3	MSC MSC	1183 1047	48 LB	74 10	1037 86

TABLE 6.3 (Continued)

SPACE SHUTTLE PHASE B DIGITAL DATABASE LAUNCH AERODYNAMICS

FILE #	BCC	B-CONTRA	осс	O-CONTRA	DR#	2-CHAR CODE	# D/S's	# RECORDS
31 32 33 34	B3 B3/B4 <u>B3</u>	MDAC MSC <u>GD/C</u>	Ø3 ₩ Ø4 ₩	MSC VR NR	1061 1058 1119 1162	LC CH 31 39	10 80 29 25	91 881 407 351

TABLE 6.3 (Concluded)
SPACE SHUTTLE PHASE B

SPACE SHUTTLE PHASE B DIGITAL DATABASE LAUNCH AERODYNAMICS

TABLE 6.4

SPACE SHUTTLE PHASE B
DIGITAL DATABASE
LAUNCH AIRLOADS AND HEAT TRANSFER

FILE #	BCC	B-CONTRA	осс	0-CONTRA	DR#	2-CHAR CODE	# D/S's	# RECORD:
20 21 22 23	ADS B1 ▼ B2 B4	MDAC MSFC GD/C	<u>02</u> V 02/03	MDAC ▼ MSFC NR	1174 1222 1259 1129	T8 TC 67 AX	891 113 48 130	11881 5490 1315 4959
HEAT 24	TRANSFER B1	MDAC	Ø2	MDAC	1263	ØL	21	247

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APPENDIX C-1

MODEL FIGURES

LAUNCH AERODYNAMICS

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DELTA WING ORBITEF CANARD BOOSTER JIDPVAR(1) IDPVAR(2) NDV ALPHA MDAC MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE MACH 9 55 125 75 79 67 38 32 46 42 11 22 12 1.6 2.0 27 23 33 8/ 13 28 CD $\boldsymbol{\omega}$ N 4 129 126 68 76 35 #3 80 72 47 39 0,6 0.85 1.1 1.2 34 701 29 t T Ø 73 15/ 36 69 25 20 40 $\widetilde{\omega}$ 9 30 4 7831 130 74 78 70 121 37 26 9 12 17 31 ω B 4 4 B CXA ပိ C 0 O ô ŏ $\hat{\mathcal{S}}$ ő ô O Ó PARAMETERS / VALUES 3 ° ဝိ 9 2 60 ° (°) ő ő ဝိ 0 Ö Õ 0 0 O ô ° 겋 9 O #ò ô g ő ŝ ० ő ပိ ő 0 ง 9 S ô ဝိ Ö CLM 5. Ö 0 ,0 ő 50 50 o ó õ oʻ SCHD. 4 4 -8 Ø B A A B đ CAB 16 71 0 CONFIGURATION 02 O + + COEFFICIENTS: 77 2 a or B 5/7 708 607 0/7 107 607 207 DATA SET IDENTIFIER 607 107 102 107 RAB 8 N.Y

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M POSTTEST MACH NUMBERS (OR ALTERNATE INDEPENDENT VAHIABLE 63 1.2 1.5 2.0 58 50 54 13 121 89 12 101 801 9 25 88 201 93 66 96 55 122 8 811 29 49 5/ 0.6 0.85 1.1 65 109 103 85 52 124 123 88 09 56 116 115 120 119 100 97 16 53 23 è NO. of RUNS m m 3 3 3 'n 7 ő ó PARAMETERS/VALUES Ö Ó Ö ŏ ١ ı ١ 9 ő ô ô Ô 100 Ó 1 ı 9 Ĉ -/0,-90 g ő o Ċ ı õ ő ő ò 0 ç 35 Ö ó ò 0 50 'n Ċ B <u>'9</u> 8 o Ø ŏ SCHD. 0 A -5 3 Ø A BB BB H T A A +BZWZVIRI 24+B2W2VIRI +82VIR CONFIGURATION 0 10 + + 82 Ó BUI 3 23 15 130B1 125 DATA SET IDENTIFIER 7/9 20 £27 124 627889 132 646 117 121 727 127 187 RAB

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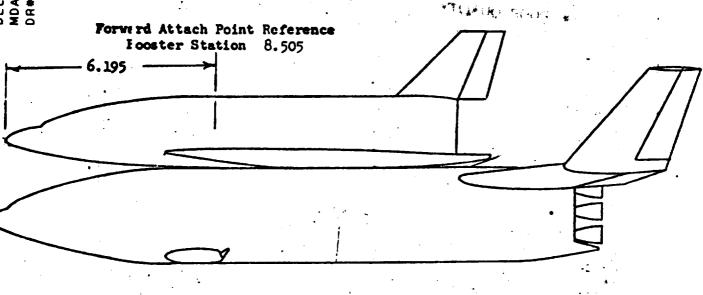
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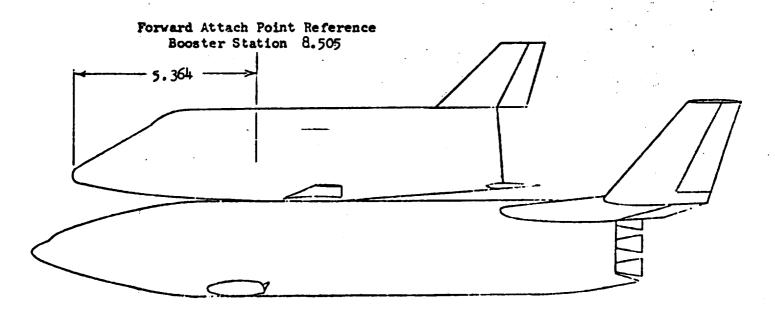
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High Wing Booster + HCR Orbiter



High Wing Booster + LCR Orbiter



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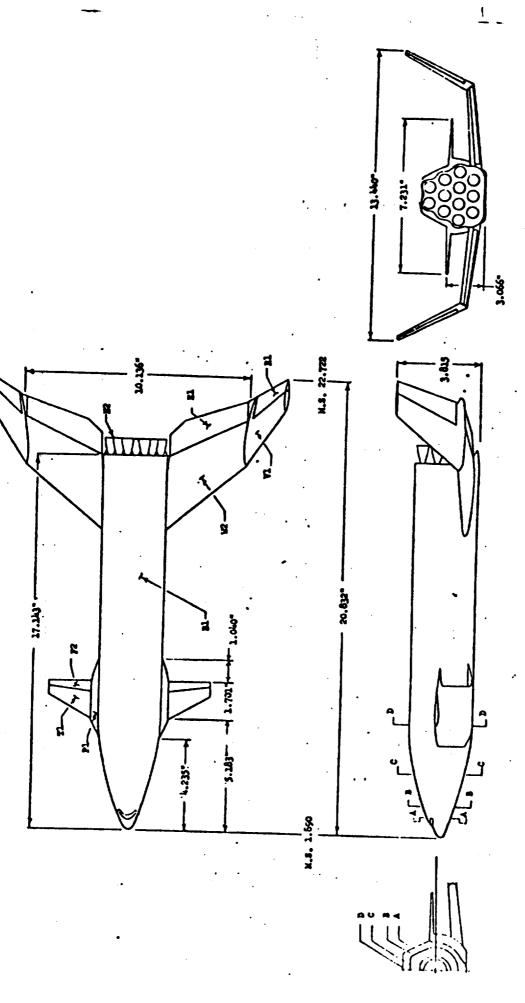
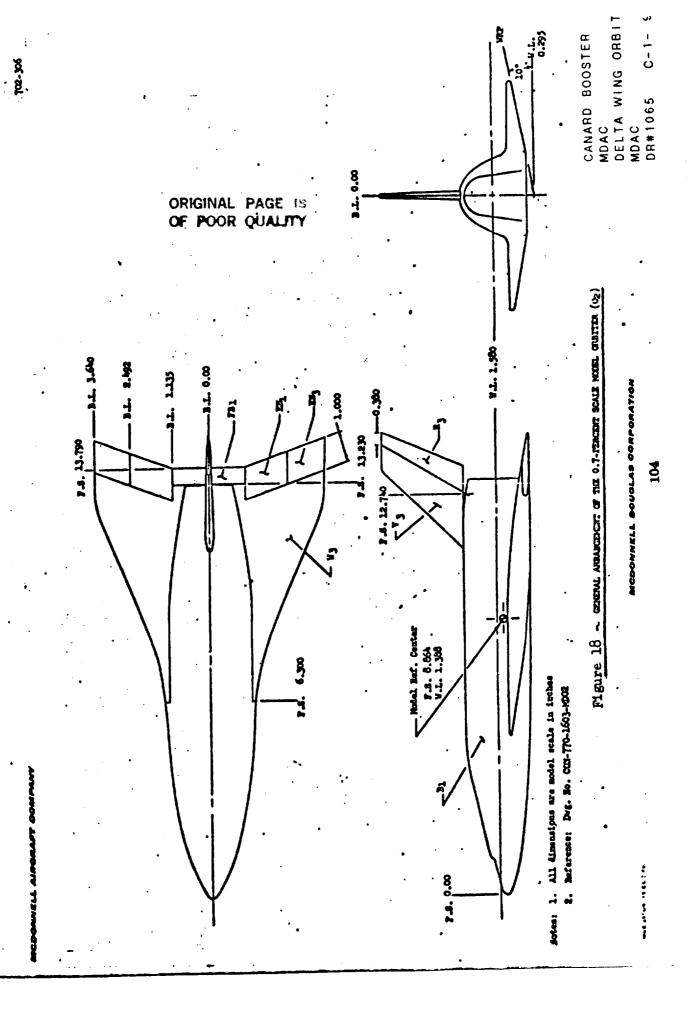
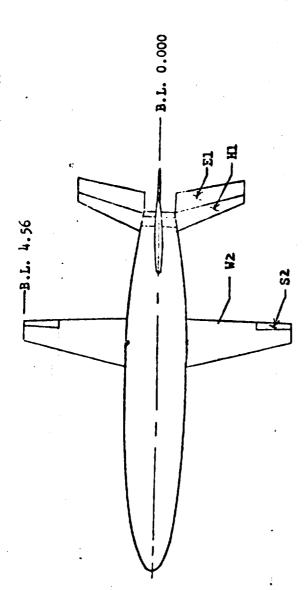
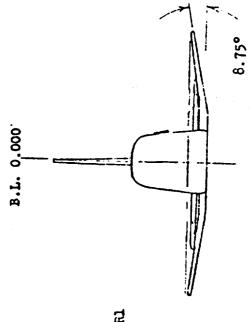


FIGURE 7



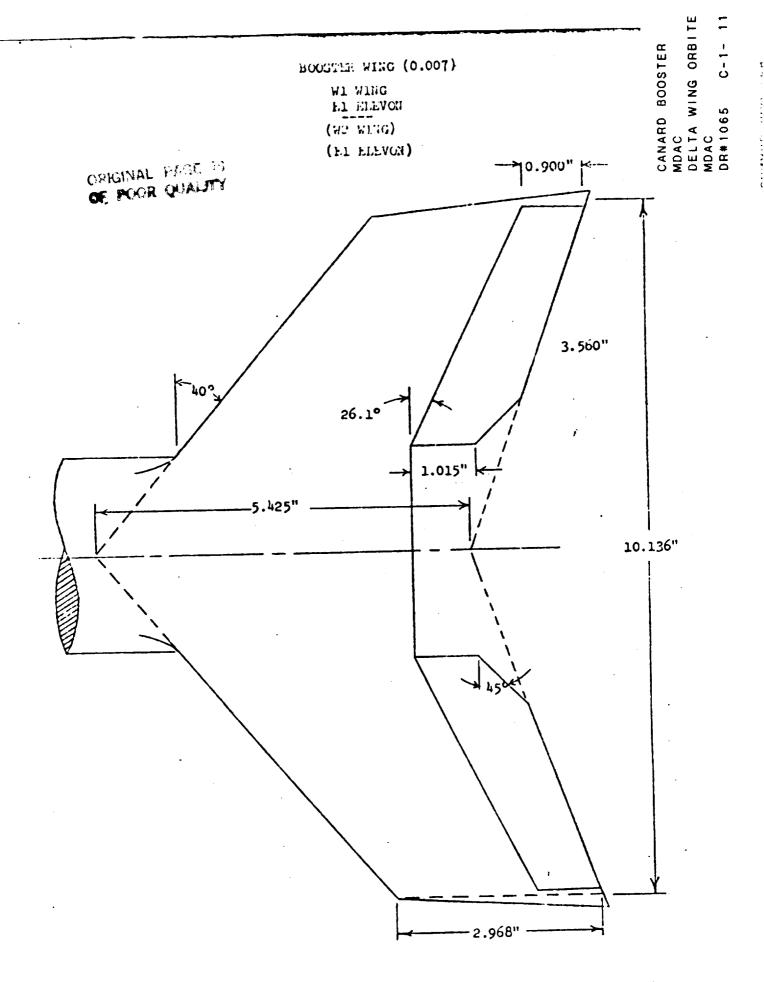
LCR ORBITER (01) MODEL CONFIGURATION (0.007)



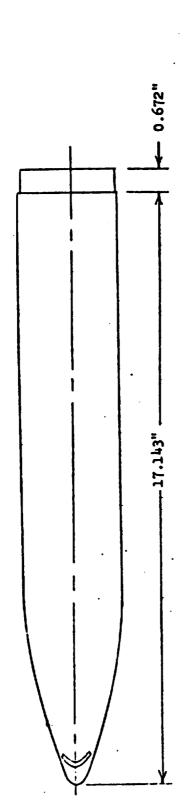


Orbiter Ste. 11.520 B2 -Orbiter Sts. 0.000" W.L. 0.000'-

FIGURE 13



BOOSTER BODY (0.007)



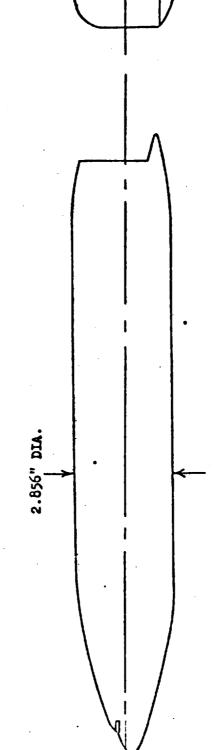
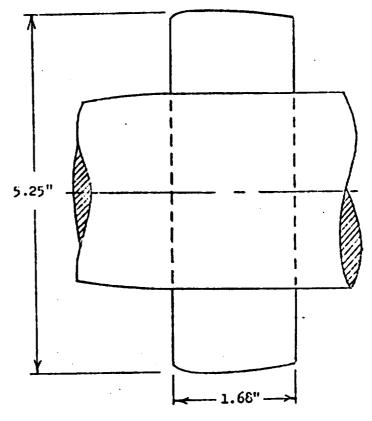


FIGURE 9



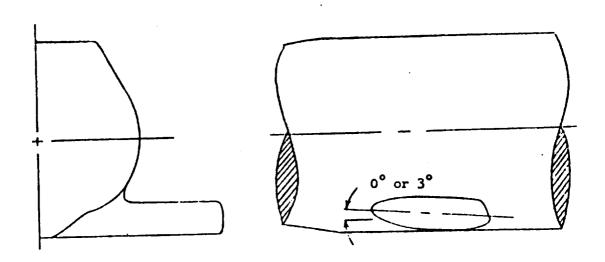


FIGURE 10

BOOSTER AERODYKANIC CANARD (0.007)

T1 AERODYNAMIC CANARD F2 FLAP

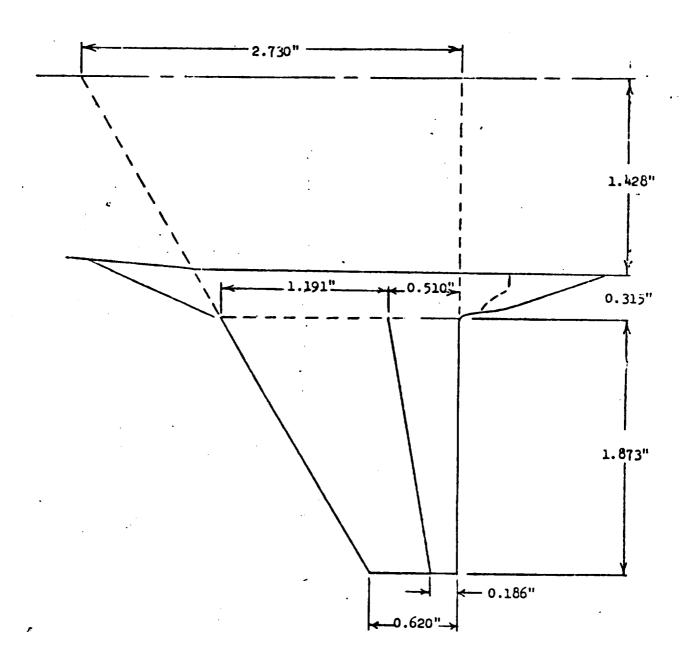
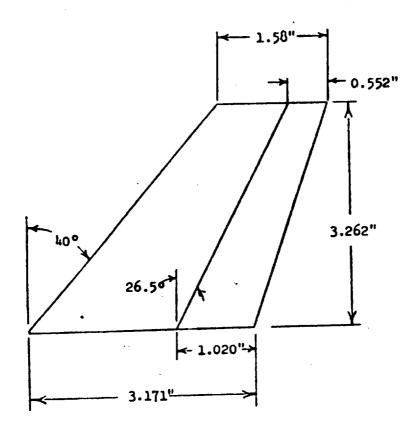
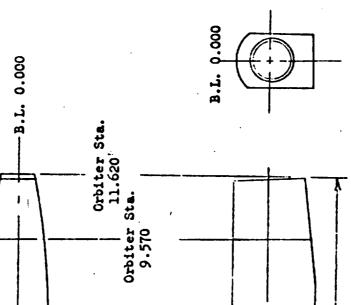


FIGURE 11





Orbiter Sta. 3.500

Orbiter Sta.

FIGURE 14

- 12.000" -

W.L. 0.700 (Balance C)

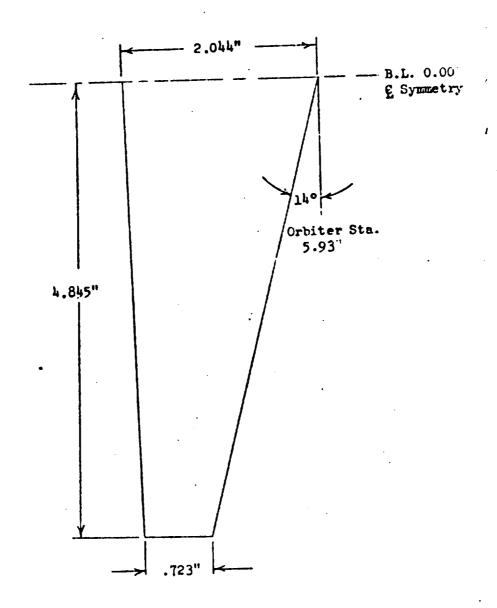


FIGURE 15

LCR ORBITER (01) HORIZONTAL TAIL HI HORIZONTAL TAIL EI ELEVATOR

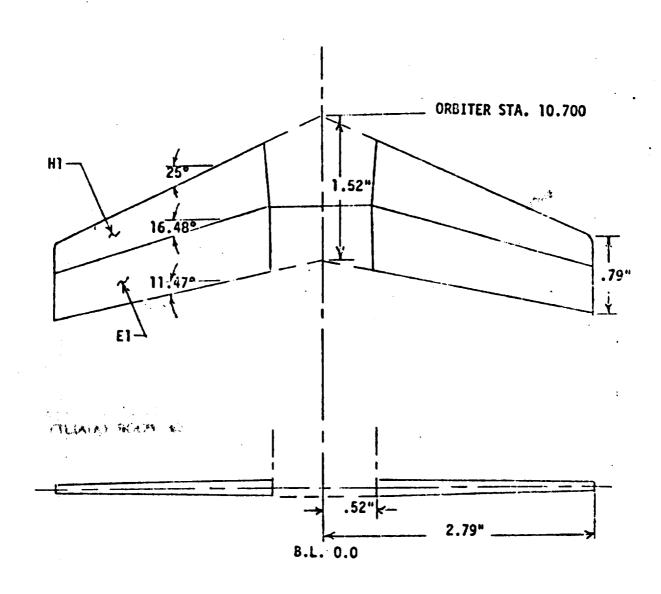
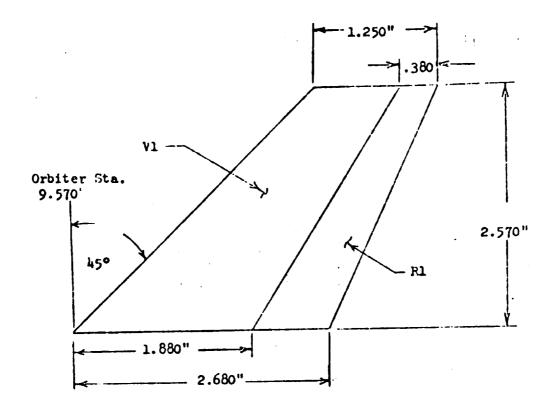


FIGURE 16



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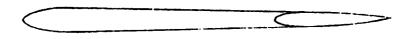
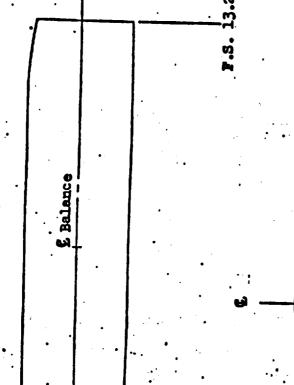
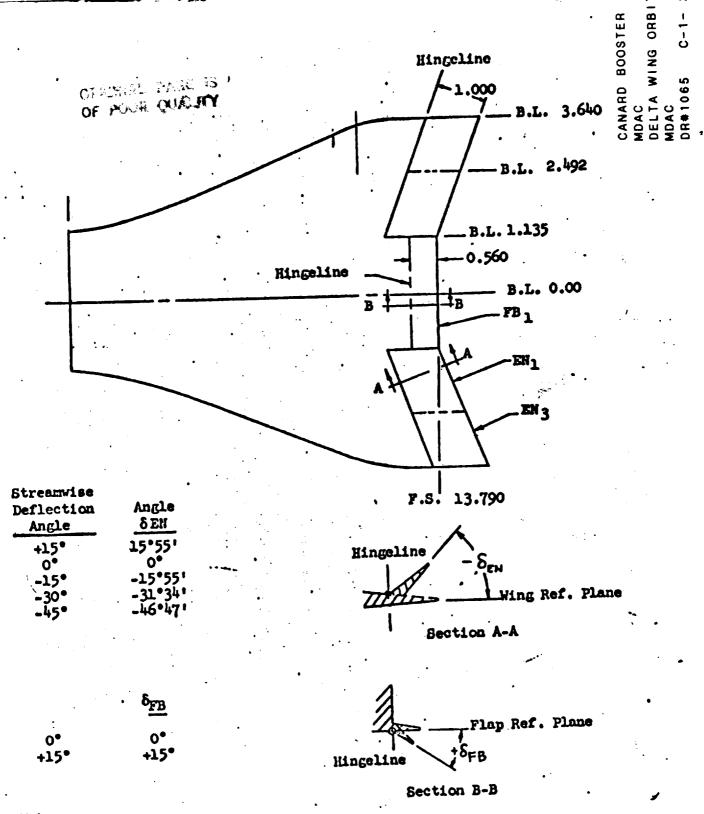


FIGURE 17



Typical Cross Section

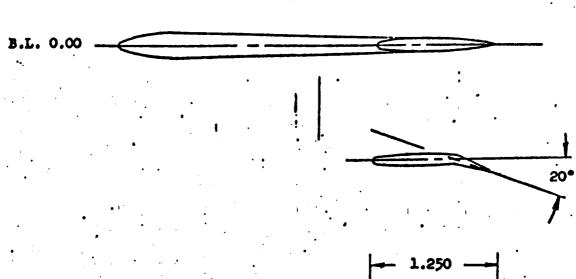
FIGURE 19 - HCR - BASIC FUSELAGE (B1 Notes:
1. All dimensions are model scale in inches.
2. Reference Drg. CON-770-1603-MD02

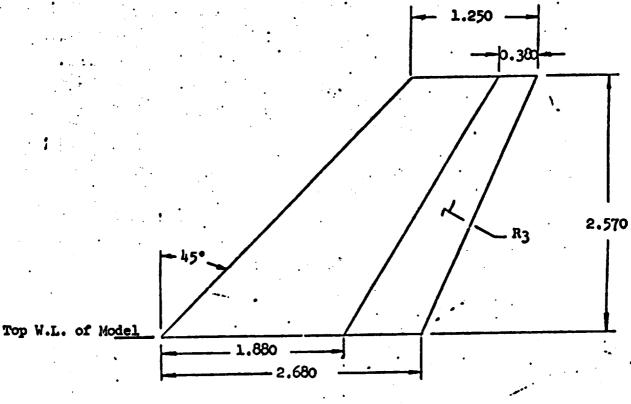


Notes:

- 1. All dimensions are model scale in inches.
- 2. Reference: Dwg. CON-770-1003-MD02

FIGURE 20 -HCR - WING (W3), ELEVONS (EN1, EN3), AND BODY FLAP (FB1)





Planform View

All dimensions are model scale in inches.
 Ref: Dwg. CON-770-1603-1001

FIGURE 21-HCR-VERTICAL TAIL (V3) AND RUDDER (R3)

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DELTA WING ORBITER

CANARD BOOSTER MDAC

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MDAC DR#1108 CANARD BOOSTER MDAC

DELTA WING ORBITER MDAC DR#1108 C-1- 28

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CANARD BOOSTER
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MDAC
DR#1108 C-1-29

CANARD BOOSTER MDAC

DELTA WING ORBITER MDAC DR#1108 C-1- 30

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HASA-HEFC-HAF

CANARD BOOSTER
MDAC
DELTA WING ORBITER
MDAC
DR#1108 C-1-31

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MDAC
DELTA WING ORBITER
MDAC
DR*1108 C-1- 32

VA 1163 DATA BET COLLATION SHEET

TEST

B POSTTEST 10.0 O PRETEST –(IDPVAR(1) | IDPVAR(2) | NDV 1311 319 330 339 354355 25E 357 302 31/ 326 350 346 349 360 205 1/4 323 333 3433 5/1552 302 326 335 331 345 350 359 309 320 327 327 347 347 36 36 325.62 202 312 320 337344353 303 316 321 336 341 353 601 61P 619 636 637 64 623 632639 040 602 617 620 63563 10647.80 29 304315132732556 12/2/22/1330344 616 621 634 427624 615 622 63 612 625 630 624 631 6-6 6-9 12. E.M. 5 DELTA 2/4B 60P 611 610 603 605 609 55 109 127 306 30/ 5 DUE DATA POINT PER DEIREE So Sun ۵, 4 40 0.0 £YK 0.0 Seat PARAMETERS/VALUES A: M. 37 0.0 5.0 -31/51 731 111 PURPURALLA -019 243 105 222 150 S -/43 -00 162 777 351 5 15A 16.84 0:0 A=-10' to +10' a B 0 7 SCED. DKKTTER 177 CONTIGURATION . ולנוס ALPHADCLA COEPTICIENTS: a or A DATA SET TRENTIFIER 8T\$ 142 143 1:7 11:5 146 14 1.3 3 11. 13 **15**8 148 V 1001 1:/ ì 191 151

HASA-KSFC-KAP

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CANARD BOOSTER
MDAC
DELTA WING ORBITER
MDAC
DR#1108 C-1-33

CANARD BOOSTER
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DR#1108 C-1-34

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O PRETEST

DATA SET COLLATION SEERT

TEST VA 1163

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CANARD BOOSTER
MDAC
DELTA WING ORBITER
MDAC
DR#1108 C-1-35

MDAC
DELTA WING ORBITER
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DR#1108 C-1- 36

DATA SET COLLATION SHEET

TEST VA 1163

O PRETEST

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O PRETEST

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132

CANARD BOOSTER
MDAC
DELTA WING ORBITER
MDAC
DR#1108 C-1-37

CANARD BOOSTER MDAC

DELTA WING ORBITER

C-1- 38 MDAC

O PRETEST

DR#1108

DATA SET COLLATION SHEET TEST VA 1163

LIDEVAR(1) IDEVAR(2) NOV 4/60 1:34 B POSTTEST .9.Pl 10.0 DELTAR 15.52 17.30 1706 11909 1800 1803 1832 1807 1808 184 1 11.22 1233 Hi29 1804/111/ 11712 1125/1231 1828 1221 3 122. 1427 1404 1411 1417 1425 414 MIS 1428 409 1412 1417 1426 464/9/14/0/14/5dt 1409 1450 1433 14211422 1805 1810 1819 1824 DELTA Z/LB 9/2/ 1803 1212 1217 N. 55 10/1/291 17/3 1402 1413 181 1406 182 1401 1601 Ş +10 DAY DOTA POINT PER DESIGE No. Runs d 9 h 9 4 A : Ma | Sea | Se 0.0 CYK PARAMETERS/VALUES -. 39 0.0 5.0 יכג 31. PURPUR AVIA .43 105 167 522 -11/5 610-105 -31 Z 3 20. 0.0 100. 16.84 25 Ŕ A= -100 +0 8 0 0 SCHD. JC.A 19 DIVAL CRITTER 777 CONTIGULATION " ALPHA OCLA COEFFICIENTS: SCHEDULES DATA SET IDENTIFIES a or g 245 250 36. 21.19 346 1,50 25. 157 34/3 Pine 11/2 146 17.7 RT8,241

HASA-MSFC-HAP

133

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DATA SET COLLATION SHEET

TEST VA 1163

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CANARD BOOSTER MDAC DELTA WING ORBITER MDAC

C-1- 39

DR#1108

CANARD BOOSTER
MDAC
DELTA WING ORBITER
MDAC
DR#1108 C-1- 40

TEST VA 1163 DATA SET COLLATION SEERT

O PRETEST

10.0 1934 B POSTTEST TIDES AR (1) I ROPAKR (2) INITE 182 221 550 . 599 . 908 D 7/ 78. 9 1902 1913/1916 1927/1930 1901 1901 AIS 1920 P39 1906 1909 1924 1923 1953 1907/1907/1921/1923 1935 1904/191/1925/1921 1903 1912 1917 1926 1905/1910/1919/924 5 DELTA Z/LR 200 2019 2015 2002 2013 2016 2003 2042 2017 151 55 2005 2010 2006 1008 2007 2008 201 2011 135 ...9 64 A = -10" to +10" ONE DATA POINT PER DEGREE Runs Vens m 4 6 প ત 43 Ki Ma Sea to -20. 5.0 20. PARAMETERS/VALUES ICA ICAL ICY 0:0 0:0 -:59/ 0.0 31, PLAC PURCAS/A 100 201 . W.3 .167 -99 201 12 24.5 17. 116:-.15/ 100. 23 9 0 SCED. A 2 6 PRITTER CONTICULATION 10% 13 mode ALPHABC.LA COEFFICIENTS: G OF B SCHEDULES DATA SET IDENTIFIER 222 273 1 7% BT 265 75 277 271 27 221 279 226 282 185

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DELTA WING ORBITER CANARD BOOSTER HASA-HSPC-HÀP JIDEPALA (1) | IDEPALA (2) | NOT 332 100 M POSTTEST 222 | 12 25 | 62 12 | 522 | 522 | 512 1 | 4/2 2 | 102 P O PRETEST MDAC MDAC १५०१ ५५/५५ ४० १३६५ १३ १५३ ५५५ 154.192 - 22 P. 554.59 190B 32528755/134/133483355 4309 3509 3500 3327 3327 345 346 3356 822 2528 028 128 L28 12512 922 2352 925 1251 1351 1005 323/225 42073507 5343 354 25 1230 3343 234 420 | 250 | 351 | 550 | 550 | 334 | 3357 C MELTAR 352/155 364 351 202 305 १:३६१८:३।।।ऽर्धा 3505 3574 3523 353 3423133340 4306 3506 3513 3524 3331 334 350 350 150 155 1528 ASSESSED 15231 5 H151528 386 6058 1506 DELTA Z/LB 3503 35/16 55 DATA SET COLLATION SHEET 334 113 -119 42051205 Ş ONE DATA POSUT PER DEFREE 6 0 r Seg 60 0.0 136 411 PARAMETERS/VALUES 0.0 E R 5.0 ,C/ <u>.</u> -391 20: 26 250 PURDOWRAX/6 - 59/ 220 -143 167 52 501 .35 200 5 -145 Š KGL VA 1163 +10 8 TEST A= -10 to 10 MDAC BOUSTER CONFICURATION 13 4.1.PHABCLA COEFFICIENTS: SCHEDULES DATA SET IDENTIFIER 222 398 272 300 290 292 293 tee 195 226 787 289 41.5 A 80 160 285 RT8 223

C-1- 41

DR#1108

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MASA-MSPC-MAP

137

CANARD BOOSTER
MDAC
DELTA WING ORBITER
MDAC
DR#1108 C-1- 42

DATA SET COLLATION SEEET

TEST VA 1163

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TEST VA 1163 DATA SET COLLATION SHEET

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NASA-USPC-WAP 75.76 IDPVAR(1) IDPVAR(2) NOV R POSTTEST DELTAB 4 5 DELTA Z/L **\$**2 141 423 127 4201 4209 rolt 4103 4104 7/05 7375 4107 4168 4169 470.2 422 4705 del 4101 6 TO + 10" DWE DATA POENT PER DERREE Run. Ę, C.Y.M. Sea to 0.0 00 PARAMETERS/VALUES Ma 0.0 10.0 1-391 0.0 2.0 A: 7,71 . 31 115 22.8 PURE PURE AX/6 1 .063 -019 63 .351 -.019 .35/ 100 . 200 -145 16.04 25 1000 SCED. JC.B. 19 PUTAL BY 65TER 0 = -10 16% CONTIGULATION ALPHADELLA COEFFICIENTS: SCHEDULES DATA SET IDENTIFIER a or s 322 325 7 322 323 370 386 71.5 31.2 3 23 212 ATB 371 326 372 31.4 224 4000 7:

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MASA-HSPC-HAP

r.

DATA SET COLLATION SHEET

TEST VA 1163

O PRETEST

HASA-HEPCHAP -tueras(1)| meras(2)|wr E POSTTEST 5 . WELT.88 5 DELTA Z/LB 119 . 151 10.0 550 1521 552 25 pression 550 5510 5231506 55275512 5565 5204 1055.82 315 1955 5566 5572 63 As -10" to +10" DAY DATA > 0 ENT PER DEGREE Se Se CY CXK 3 6.0 500 0.0 PARAMETERS/VALUES ma 6.0 A. 6.0 31 S 13.5 043 167 .351 PURPORE AX/6 Sc. 0 400-11 -018 3. 1666 25 8 8 SCHD. 15.4 TONE BY COTE (118 CIME) 16.16 CONFICURATION ij ALPHABELLA **WEFFICIENTS:** a or B SCHEDULES DATA SET IDENTIFIER 520 532 539 125 RT8533 5.36 323 535 534

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DELTA WING ORBITER MDAC

CANARD BOOSTER

MDAC

C-1- 55

DR#1108

CANAHU BOOSIER MDAC

DELTA WING ORBITER MDAC 56 DR#1108

> DATA SET COLLATION SHEET VA 1163 TEST

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DATA SET COLLATION SHEET

TEST VA 1163

DR#1108 C-1- 57 DR#1108

CANARD BOOSTER MDAC DELTA WING ORBITER MDAC

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DATA SET COLLATION SHEET

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VA 1163 DATA SET COLLATION SHEET

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DELTA WING ORBITER

CANARD BOOSTER

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C-1- 59

DR#1108

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MUAC DELTA WING ORBITER MDAC DR#1108 C-1- 60

TEST VA 1163 DATA SET COLLATION SHEET

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CANARD BOOSTER
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DELTA WING ORBITER MDAC DR#1108 C-1- 62

TEST VA 1163 DATA SET COLLATION SHEET

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MASA-MSPC-MAP B POSTTEST -IDPVAR(1) IDPVAR(2) (NDV 67 DELTAN 9 DELTA 2/LB 55 157 47.7 40.4 Sam 48.2 422 1906 707 4801 1902 19.7 4901 49.3 49.4 4905 4905 Ş % & % THE OUR PATH POTHT PR DEFETE See 60 2.0 20.0 PARAMETERS/VALUES 37 110 4, -32/10.0 751 3 Purdowelsell 14.5 88 201 167 222 522 -148 10: .043 50% 551 .77/ 25. 167 151 15.8.5 0.0 8 0 SCED. LCA 40 CURTURE A= -10 1771 CONTIGUALION 211.110 ALPHADICLA COLPTICIENTS: a or B SCHEDULES TENTIFIER 2. 7818 652 657 559 155 نا 123 010 159 651 660 779 655 193

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CANARD BOOSTER
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MASA-KSFC-KAP

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DELTA WING ORBITER

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DELTA WING ORBITER MDAC C-1- 66 CANARD BOUSTER DR#1108

> DATA SET COLLATION SHEET TEST VA 1163

O PRETEST

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DATA SET COLLATION SHEET

VA 1163 TEST O PRETEST

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DELTA WING ORBITER CANARD BOOSTER MDAC MDAC

DR#1108 C-1- 67

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a or B SCHEDULES

CANARD BOUSIER MDAC

DELTA WING ORBITER 68 DR#1108 MDAC

> DATA SET COLLATION SEEET VA 1163 TEST

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CANARD BOOSTER
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TEST VA 1163 DATA SET COLLATION SHEET

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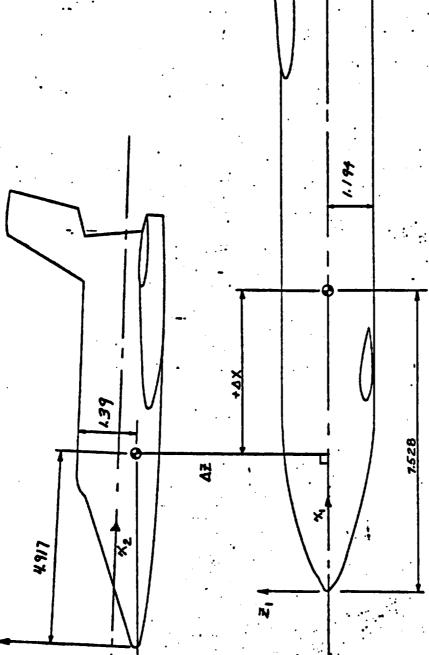


Fig. 2 - Separation Nomenclature and Moment Reference Points

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DELTA WING ORBITER
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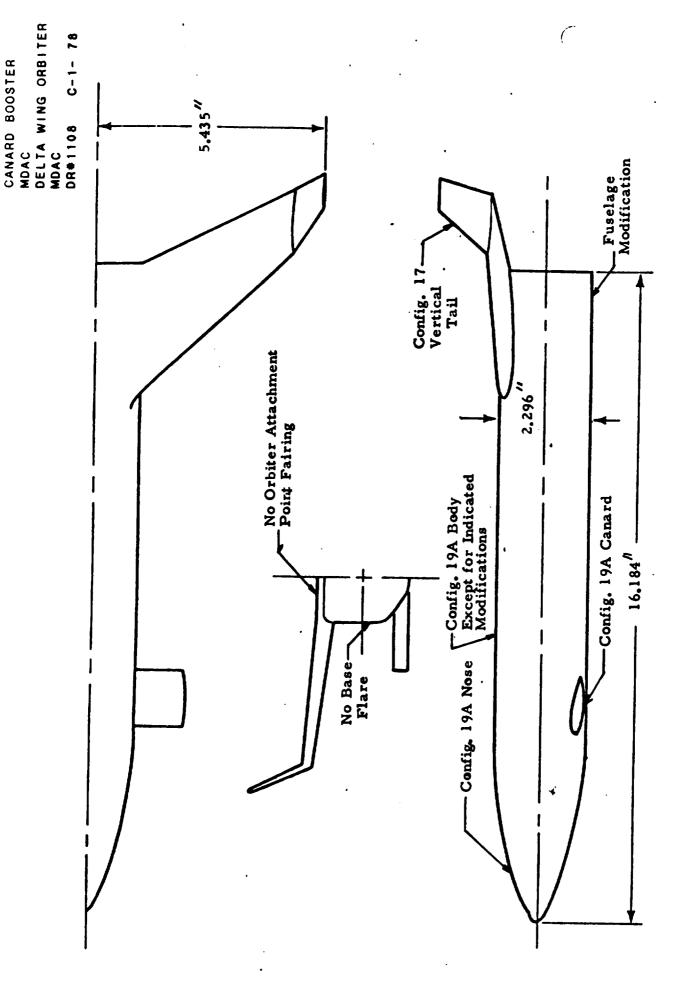


Fig. 5 - Modifications to Booster Model

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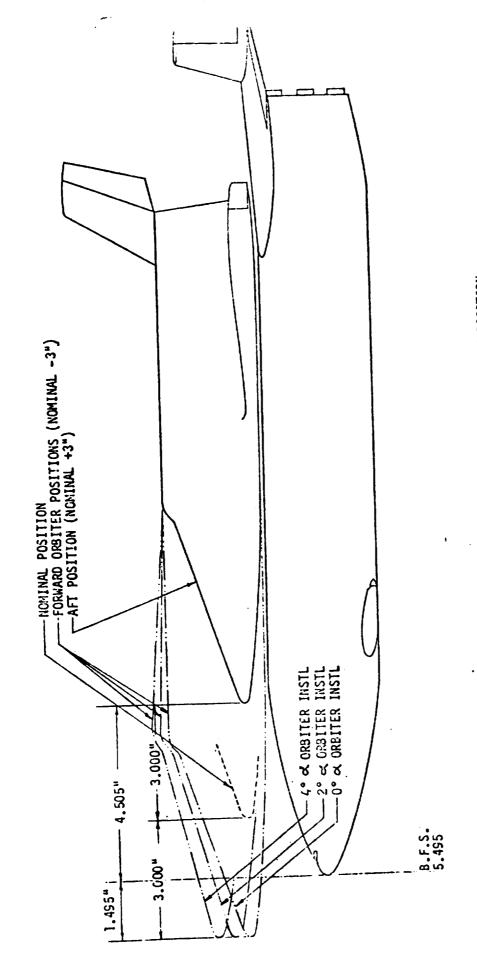
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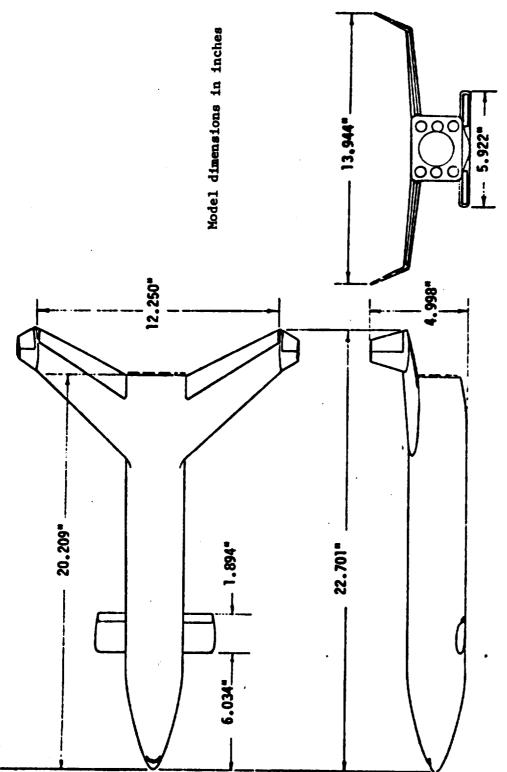
ORBITER SHOWN IN AFT (NCMINAL +3") BOLTED DOWN POSITION WITH NOMINAL AND FORWARD (NCMINAL -3") POSITIONS INDICATED

Figure B.- Space Shuttle Ascent Configuration

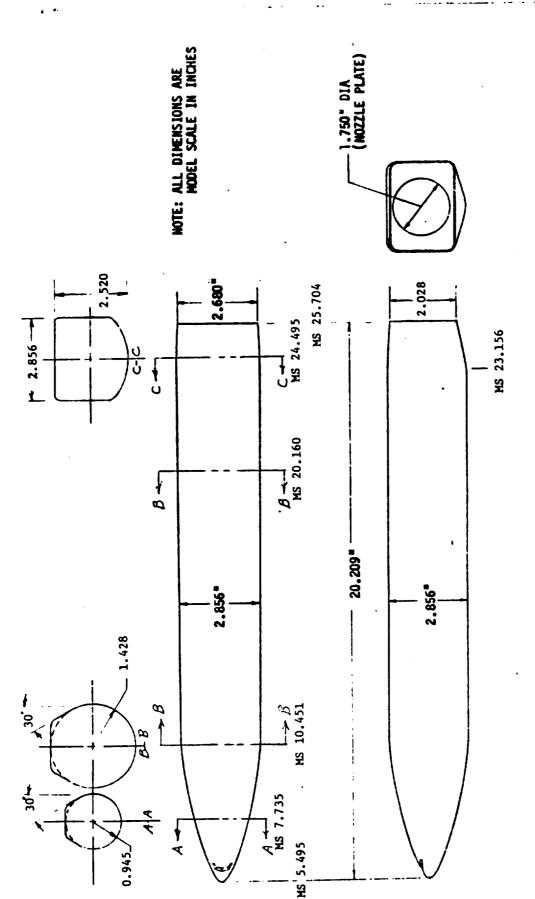
MDAC DELTA WING ORBITER MDAC

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DR#1118



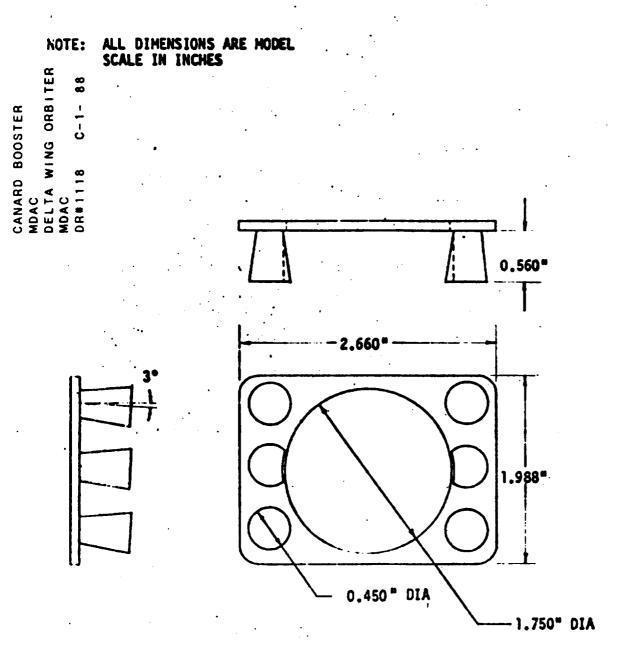
(a) Three View Figure E- Space Shuttle Booster (L5)



(b) Booster Body (B3)

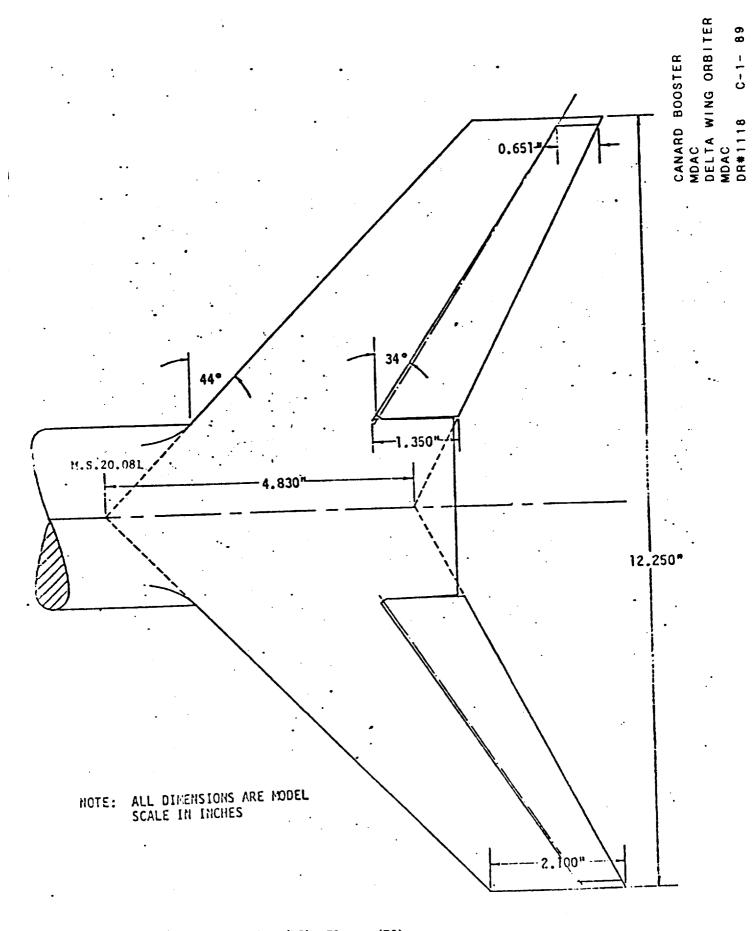
Figure E.- continued

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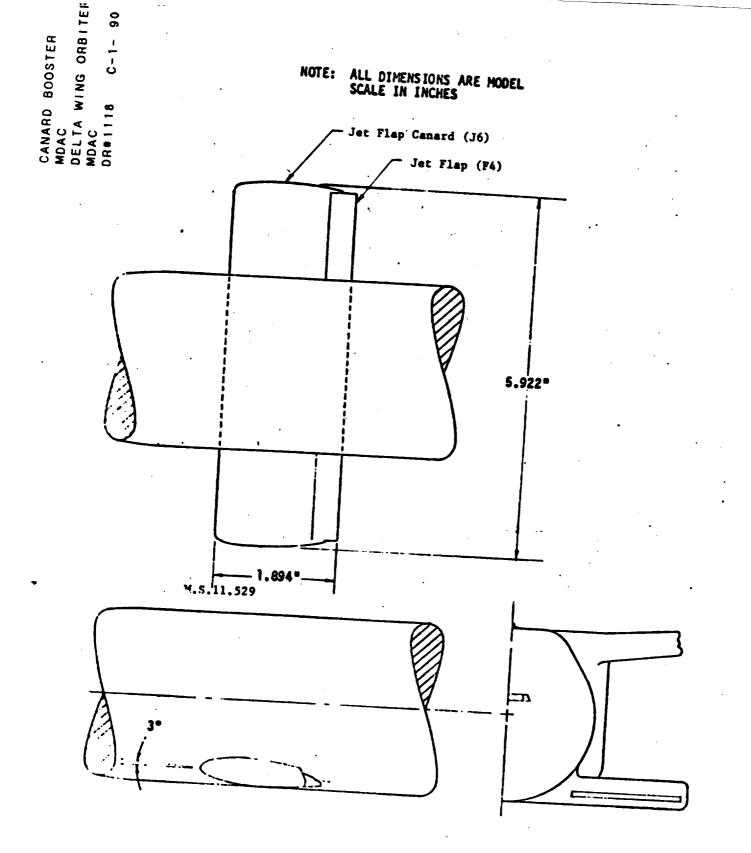


(c) Booster Nozzle Plate H12 Nozzles

Figure E.- continued

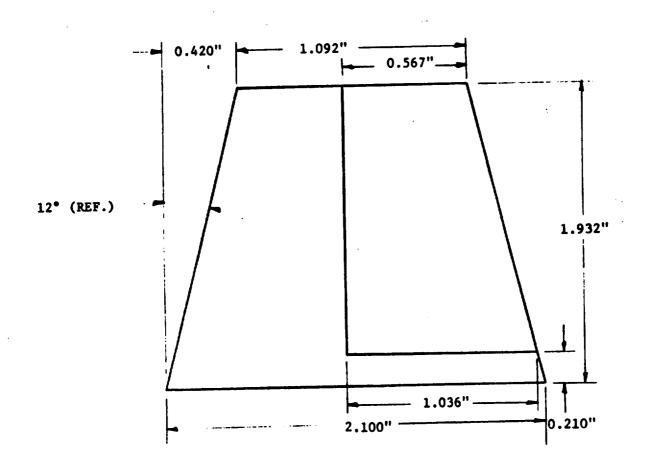


(d) Booster Wing (W5), Elevon (E3) Figure E.- continued



(e) Booster Jet Flap Canard (J6), Jet Flap (F4) Figure E .- continued

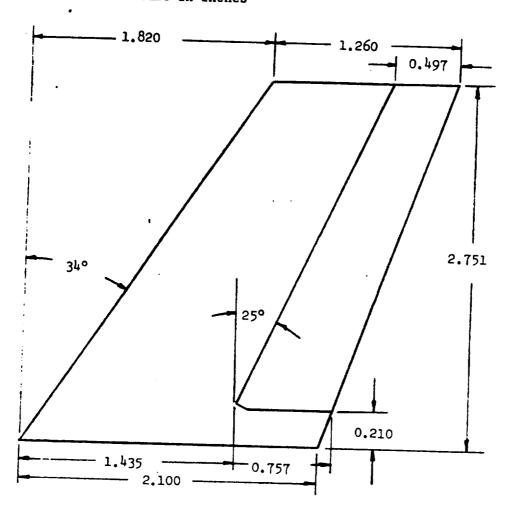
Model dimensions in inches



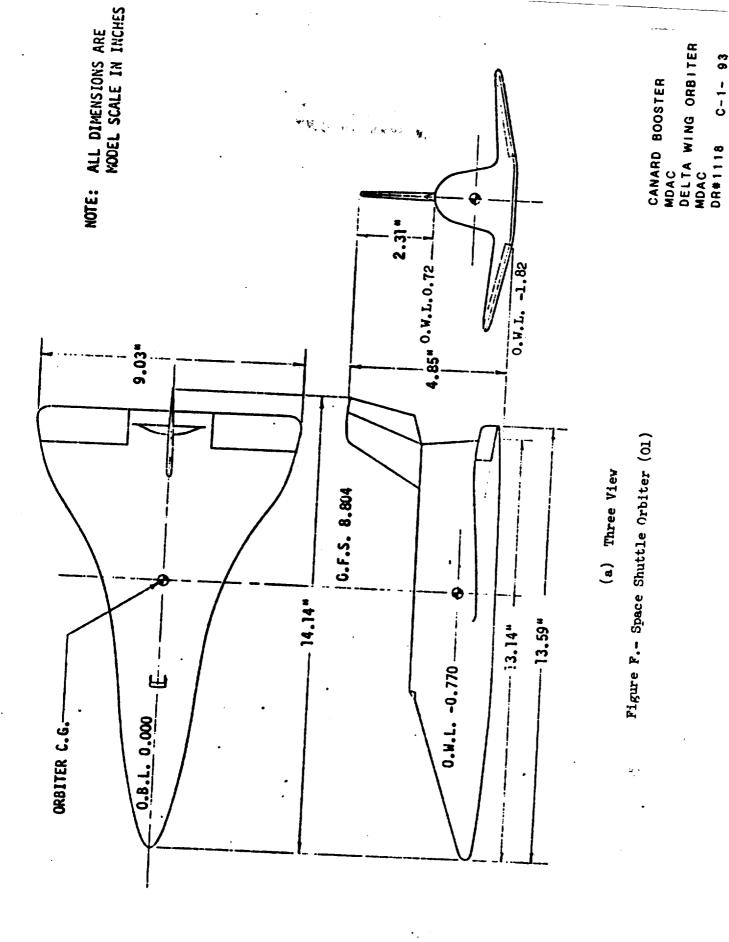
(f) Booster Wing Tip Vertical V6, Rudder R6

Figure E.- Continued

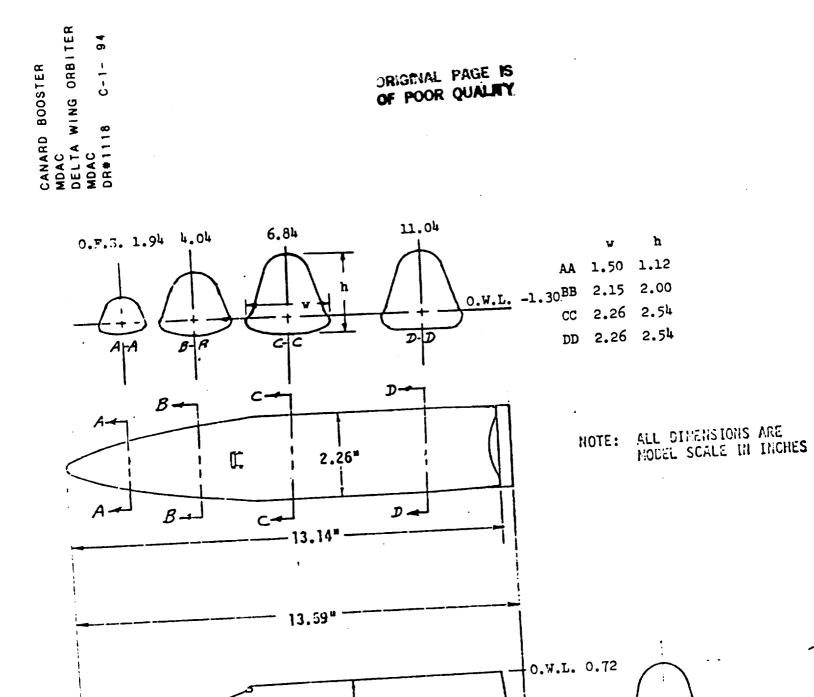
NOTE: All Dimensions are Model Scale in Inches



(g) Booster Wing Tip Vertical V7, Rudder R7
Figure E.- concluded

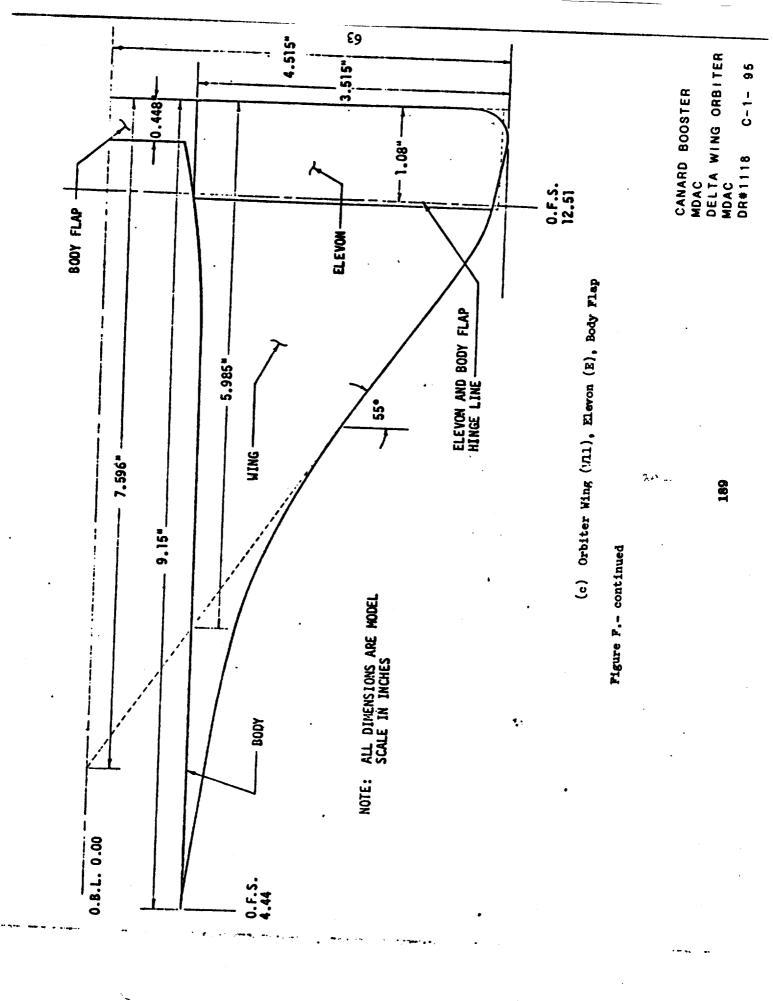


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(b) Orbiter Body, B5
Figure F.- continued

2.54" (MAX)



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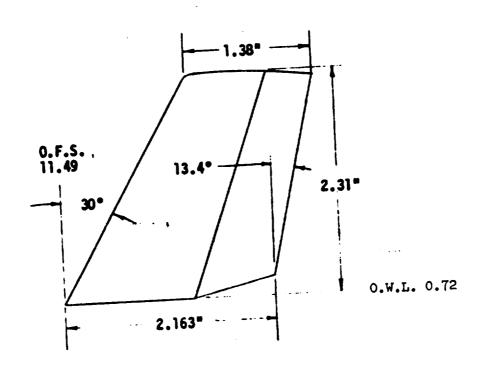
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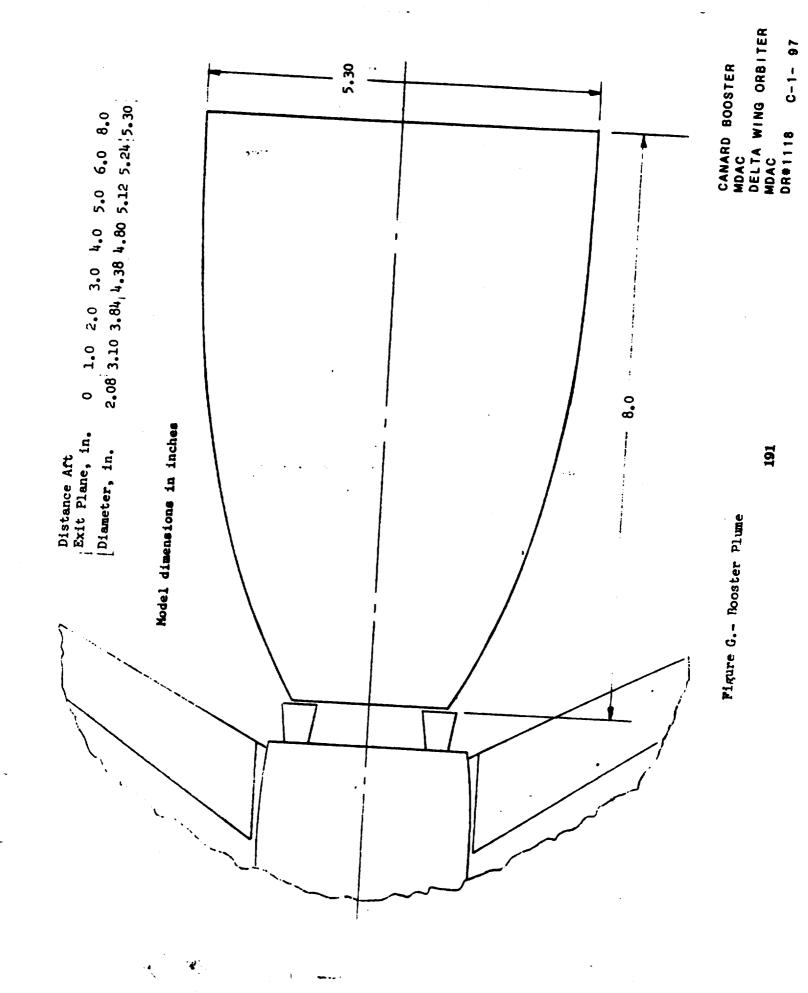
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(d) Orbiter Center Line Vertical (V6), Rudder (R6)
Figure F.- concluded



CANARD BOOSTER
MDAC/MMC
DELTA WING ORBITER
MDAC
DR#1117 C-1-98

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SCHEDULE D: X=-10-12-1-0-1-2-4-6-10 SCHEDULE B: B=-4-2-1-0-1-2-4-6-10 SCHEDULE B: B=-4-2-2-1-0-1-2-4-6-10 SCHEDULE B: B=-4-2-1-0-1-2-4-6-10 SCHEDULE B: B=-4-2-2-1-0-1-2-4-6-10 0-1-2-4-6-10 SCHEDULE B: B=-4-2-2-1-0-1-2-4-6-10 SCHEDULE B: B=-4-2-2-1-0-1-2-4-6-10 SCHEDULE B: B=-4-2-2-1-0-1-2-4-1-2-1-0-1-2-4-1-2-1-0-1-2-4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	φ/3		1	1		-		#				35	-	-	0	╀.	_	NA OO
SCHEDULE D: CX = -10; -6; -4; -2; -1; 0; 1; 2; 4; 6; 10; SCHEDULE B: B = -4; -2; -1; 0; 1; 2; 4; 6; 10; SCHEDULE B: B = -4; -2; -1; 0; 1; 2; 4; 6; 10; SAMPRID BOOSTER MOAC/MMC DELTA WING ORBITER DERTA	710			1		+		+		7				 	*	 	_	L F
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SCHEDULE D: $\alpha = -\rho' - \zeta - 4' - 2' - 1' \circ 1' 2' 4' \zeta' \delta'$ SCHEDULE B: $\beta = -4' - 2' - 1' \circ 1' 2' 4' \zeta' \delta'$ ES CANARD BOOS MDAC/MMC DELTA WING DR# 1117	1 021	J	-	ļ,	4-	-	+	1	1	7	7	-+						is Y
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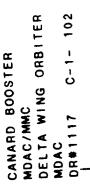
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CANARD BOOSTER
MDAC/MMC
DELTA WING ORBITER
MDAC
DR#1117 C-1- 101

C-1- 101

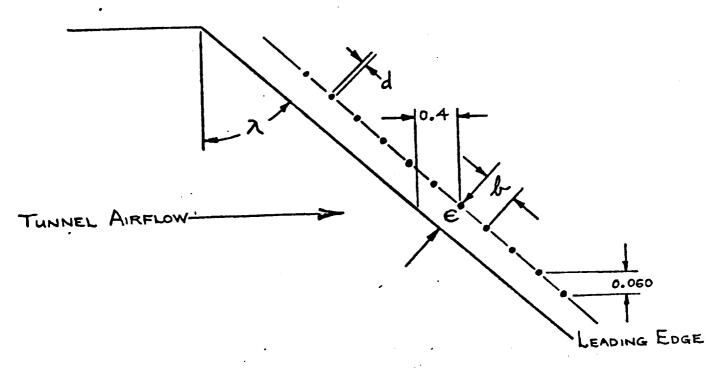
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BOUNDARY LAYER TRANSITION TRIPS FOR 0.7% SCALE SPACE SHUTTLE AT 2.3 & M & 4.6

- MODEL &

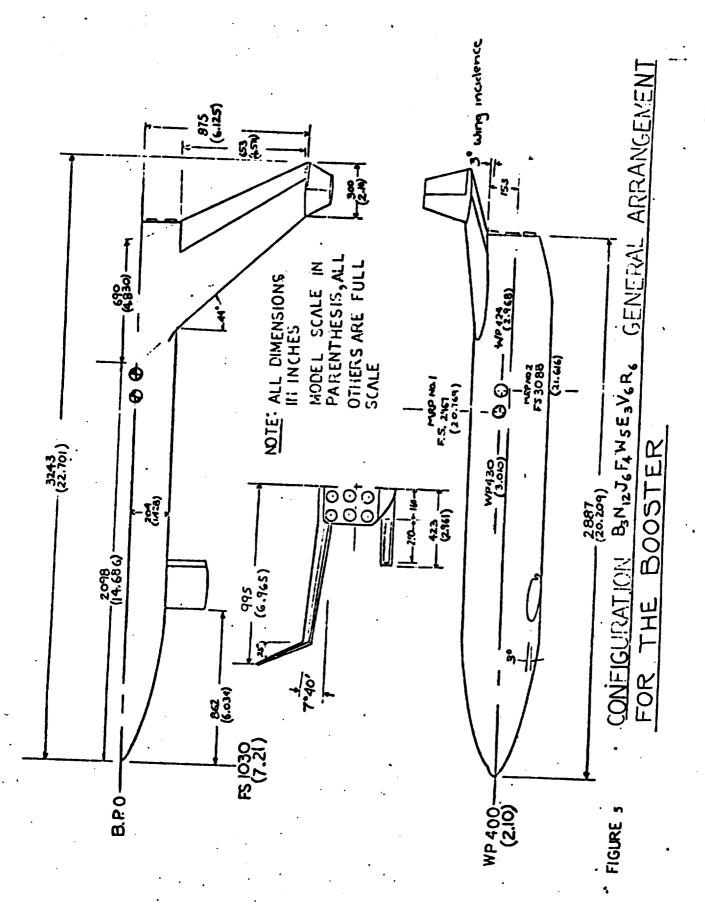


GIVEN #45 SAND GRIT $d = 0.0152 \pm .0014 \text{ in. dia}$ $E_0 = 0.40 \text{ in.}$ $VHERE \lambda = 0.060 \text{ in.}$

TRIP GEOMETRY RELATIONS

$$\epsilon = \epsilon_0 \cos \lambda$$

FIGURE 4. BOUNDRY LAYER
TRANSITION TRIPS



CANARD BOOSTER
MDAC/MMC
DELTA WING ORBITER
MDAC
DR#1117 C-1- 103

FIGURE 6 BOOSTER BODY (0.007)

B3 B007

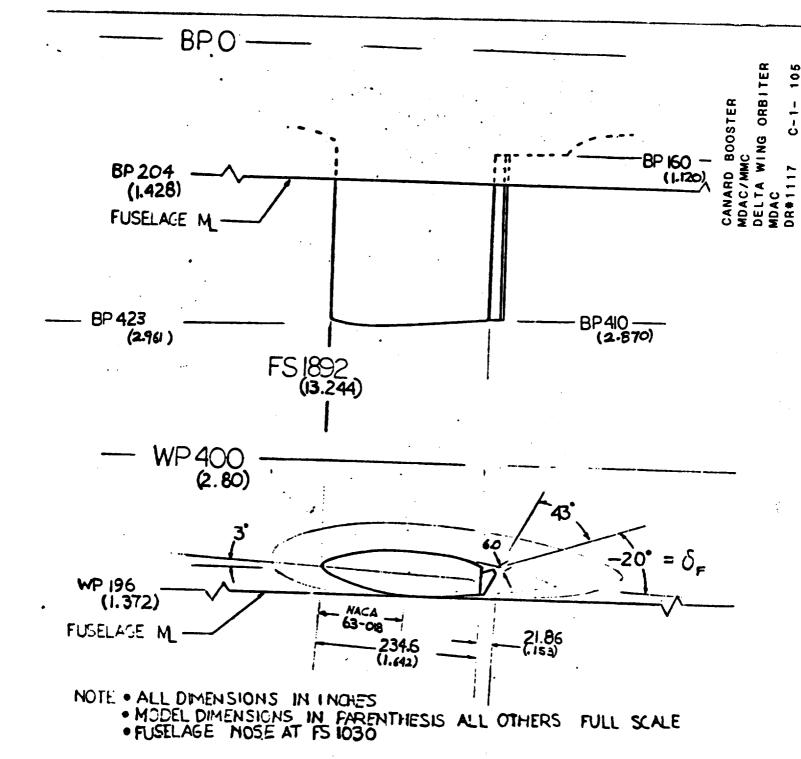


FIGURE 7 JET FLAP CANARD ~ J6 F4

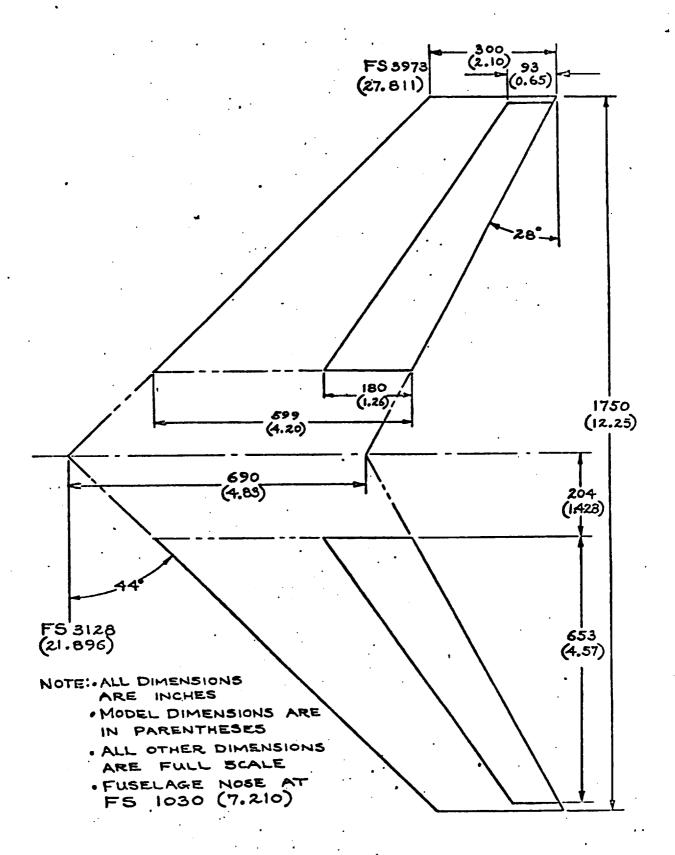
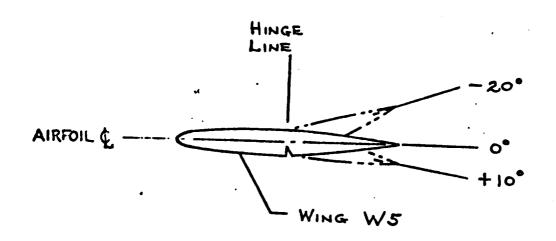
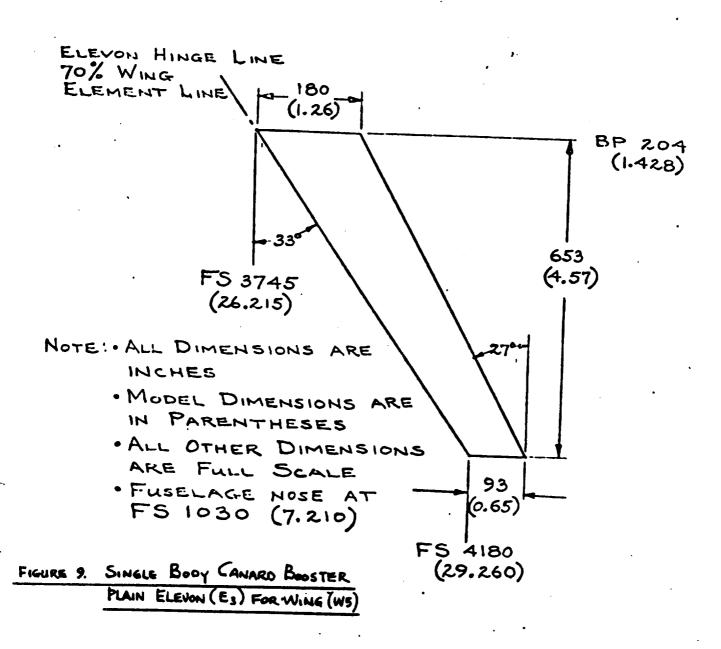


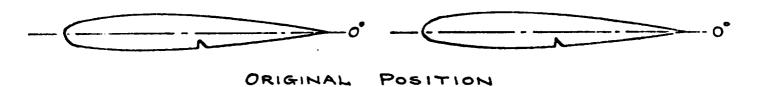
FIGURE 8. DETAILS OF WING W5 E3

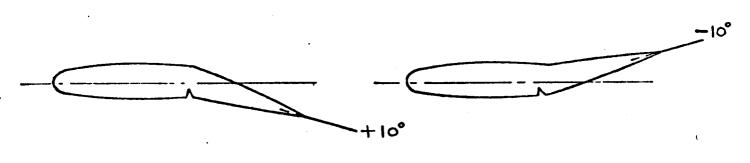




LEFT ELEVON

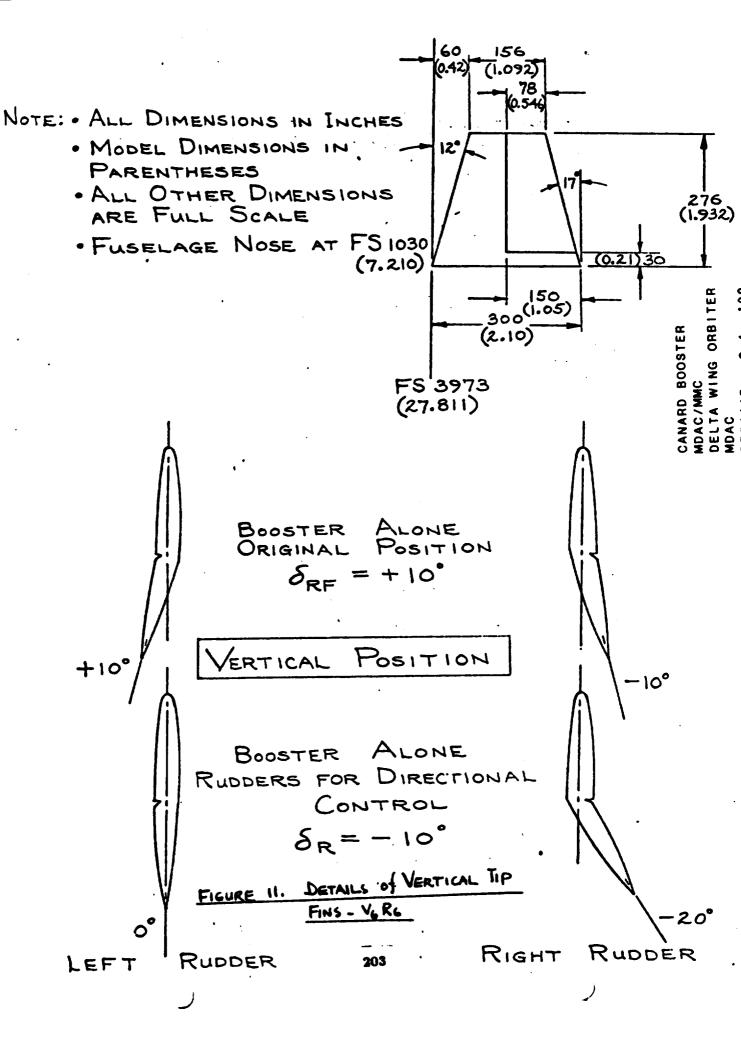
RIGHT ELEVON





AILERON Sa=+10°

FIGURE 10. SINGLE BODY CANARD BOOSTER
PLAIN ELEVONS (E) FOR LATERAL CONTROL



SINGLE BODY CANARD BOOSTER ASCENT CONFIGURATION (PRESENCE OF THE ORBITER)

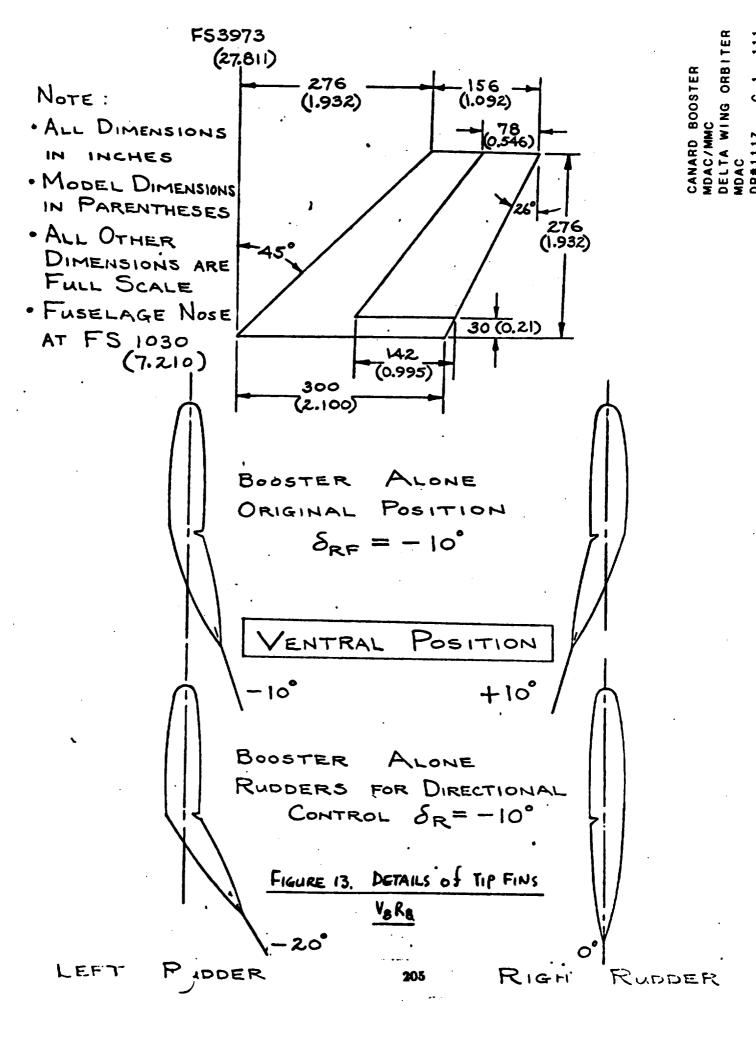
PLAIN RUDDER SETTINGS FOR V6 R6

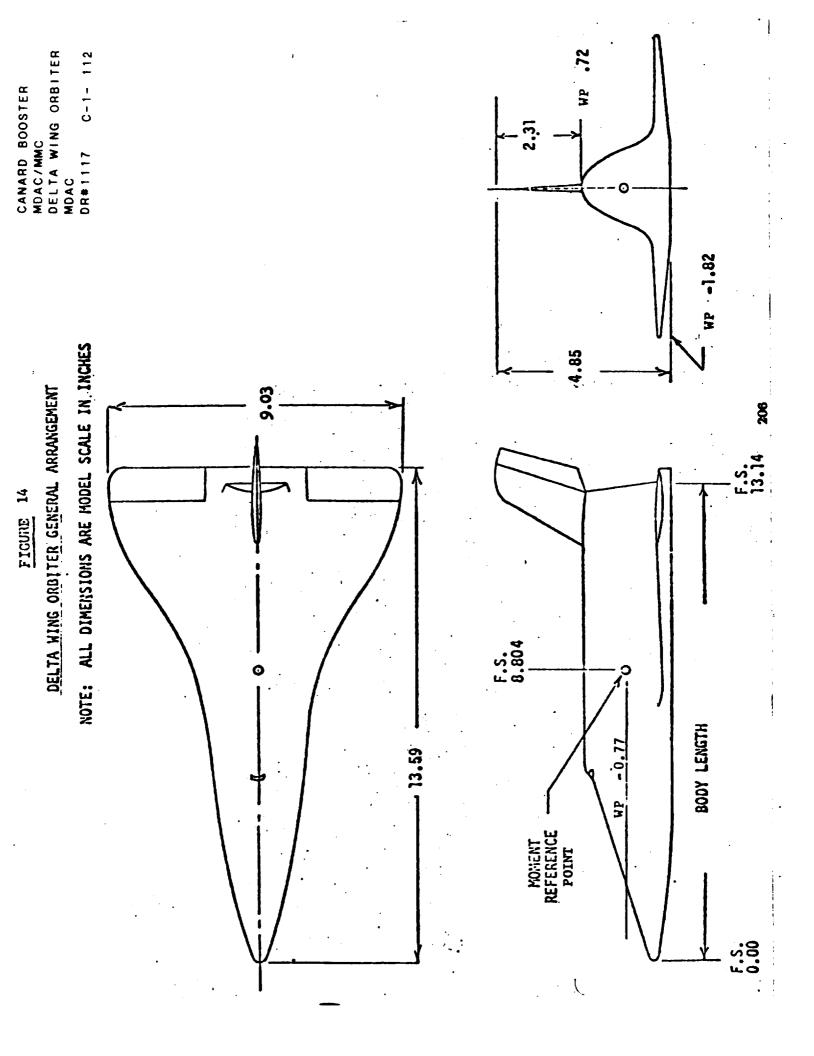
BOOSTER (ASCENT) ORIGINAL POSITION ERTICAL POSITION BOOSTER (ASCENT)

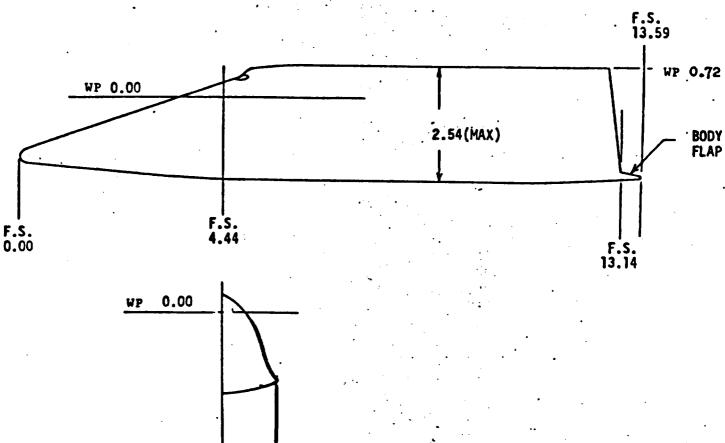
RUDDERS FOR DIRECTIONAL CONTROL SR=-10°

LEFT RUDDER

RIGHT RUDDER







NOTE: ALL DIMENSIONS ARE MODEL SCALE IN INCHES -

0.00

BP 1.13

FIGURE 15. DELTA WING ORBITER BODY, B5

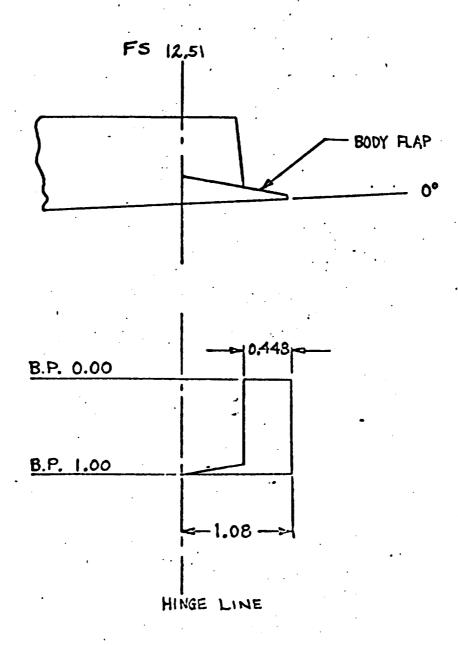
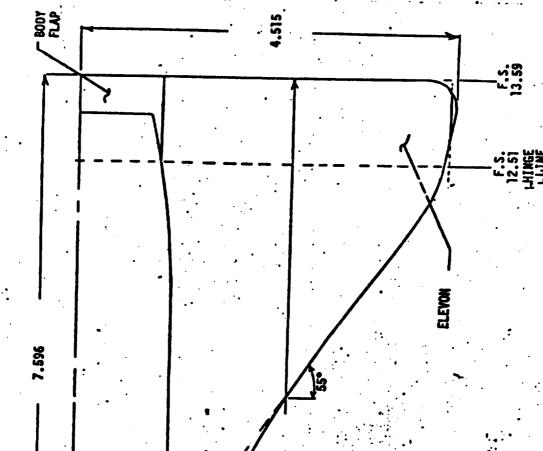


FIGURE 16. DELTA WING ORBITER BODY FLAP

NOTE: ALL DIMENSIONS ARE MODEL SCALE IN INCHES



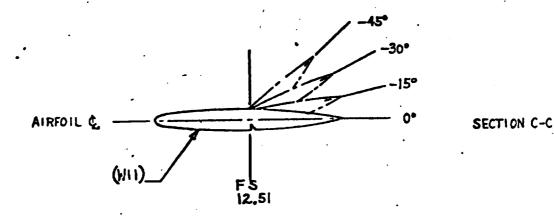
PICURE 17
DELTA HING ORBITER

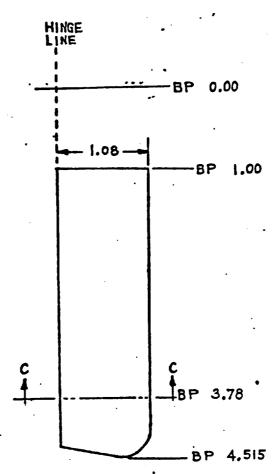
VING (HTT)

MOTES: 1. ALL DIMENSIONS ARE MODEL SCALE IN INCHES.

FIGURE 18

DELTA WING ORBITER
PLAIN ELEVON FOR WING (WII)



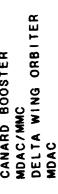


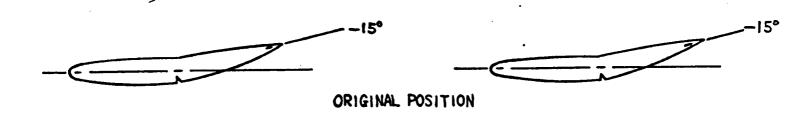
NOTES: ALL DIMENSIONS ARE MODEL SCALE IN INCHES

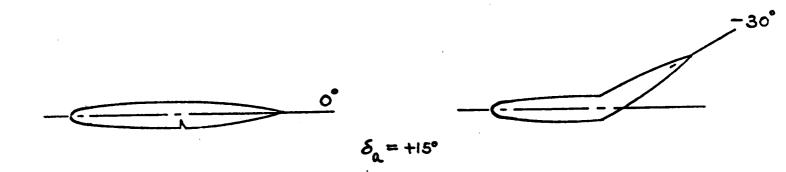
FIGURE 19

DELTA WING ORBITER

PLAIN ELEVONS FOR LATERAL CONTROL







LEFT ELEVON

RIGHT ELEVON

FIGURE 20

DELTA WING ORBITER

VERTICAL TAIL V6 AND PLAIN RUDDER

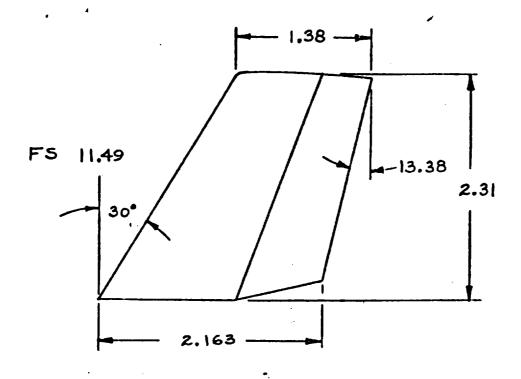
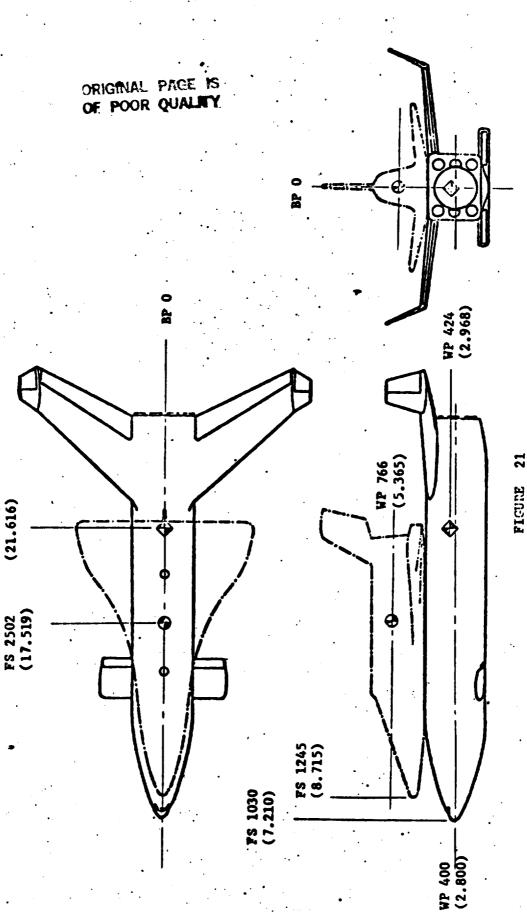


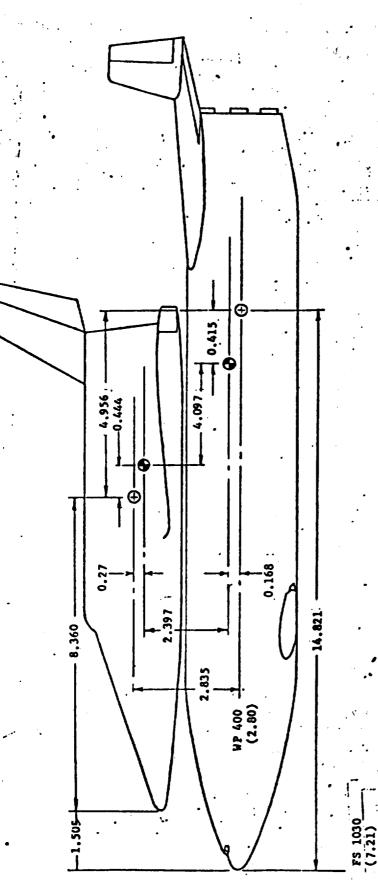
FIGURE 20.

NOTE: ALL DIMENSIONS ARE MODEL SCALE IN INCHES



MRP FS 3088 (21.616)

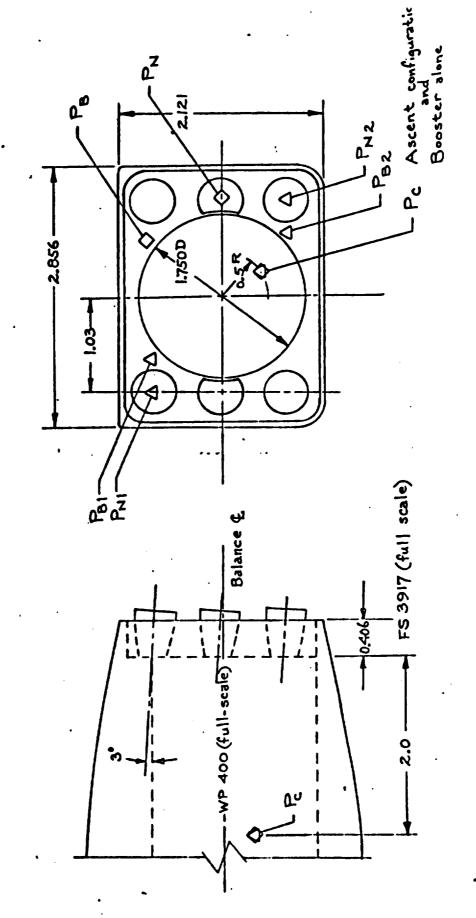
SPACE SHUTTLE ASCENT CONFIGURATION (0.007)
OCULTER INDICATED IN NUMBER POSITION AT 0° INCIDENCE



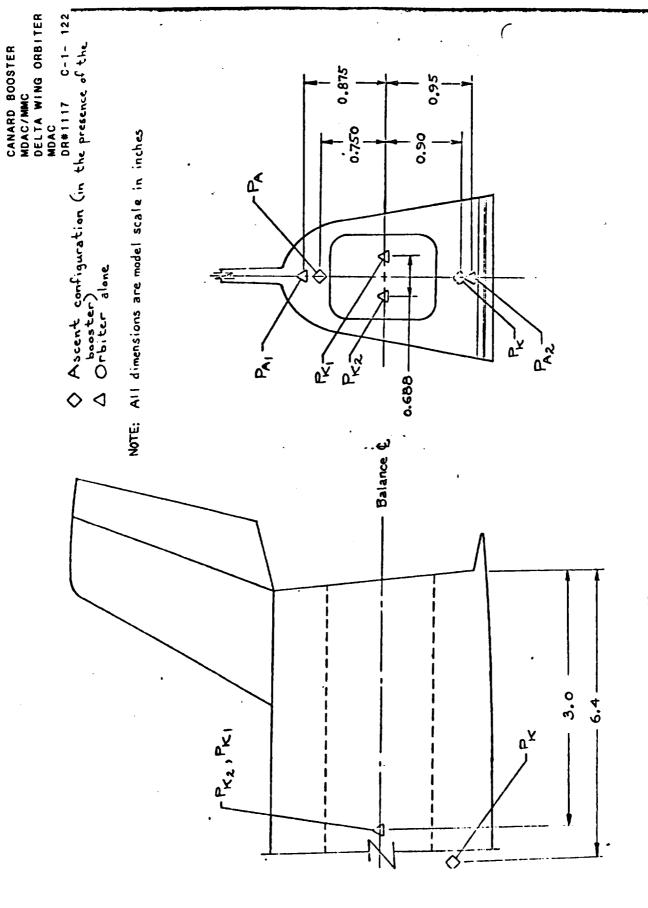
PIGURE 27 SPACE SHUTTLE NOGINAL ASCENT CONFIGURATION (ORBITER INSTALLED WITH $\delta_{ ext{Tol}} = 0^{\circ}$)

- Ascent configuration
 - △ Booster alone

NOTE: All dimensions are model scale in inches Nose at FS 1030 Full Scale



BASE NIZ GEOMETRY AND BASE PRESSURE INSTRUMENTATION - BASE NIZ GEOMETRY AND BASE PRESSURE INSTRUMENTATION -FIGURE 28



ORBITER BASE GEOMETRY AND BASE PRESSURE INSTRUMENTATION FIGURE. 29

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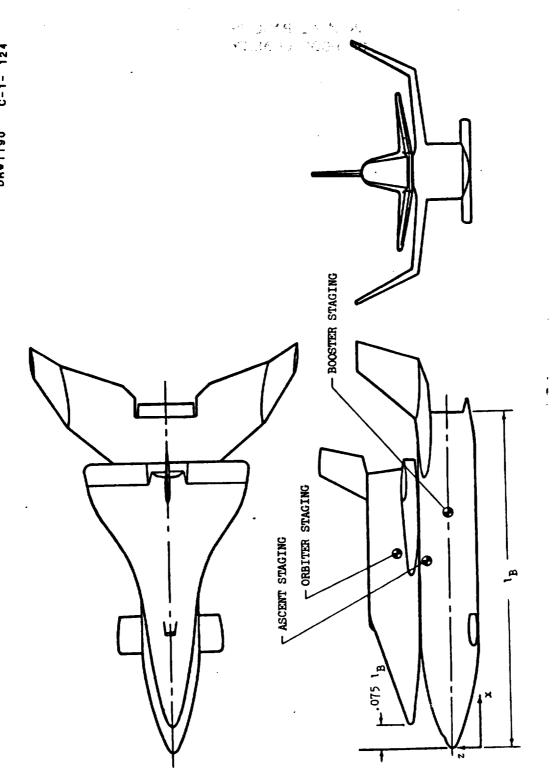
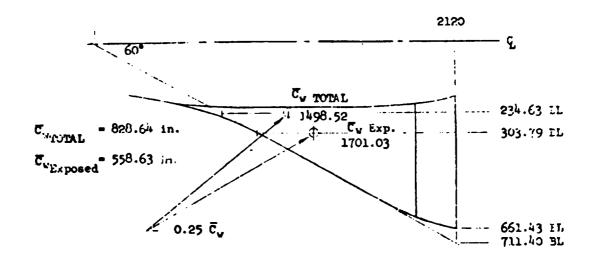


FIGURE 3. MDAC/MMC ASCENT CONFIGURATION. CENTER OF GRAVITY NOTED FOR DIFFERENT CONDITIONS.

FIGURE 4. NAR 134D ORBITZR. FULL-SCALE DIMENSIONS SHOWN



CHORD (BL 241.80)
0009-64 SERIES AIRFOIL

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TIP CHORD (BL 546.07)
0012-64 SERIES AIRFOIL

FIGURE 5. NAR WING W_{17} 9992-134 D CONFIGURATION

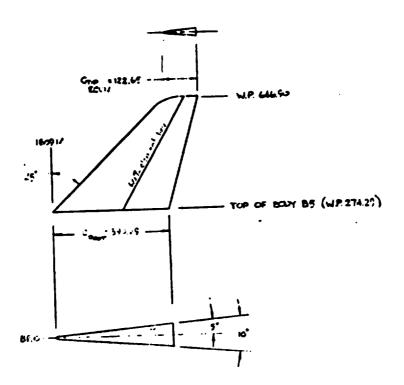


FIGURE 6. VERTICAL STABILIZER V₁₇ (NAR ORBITER)

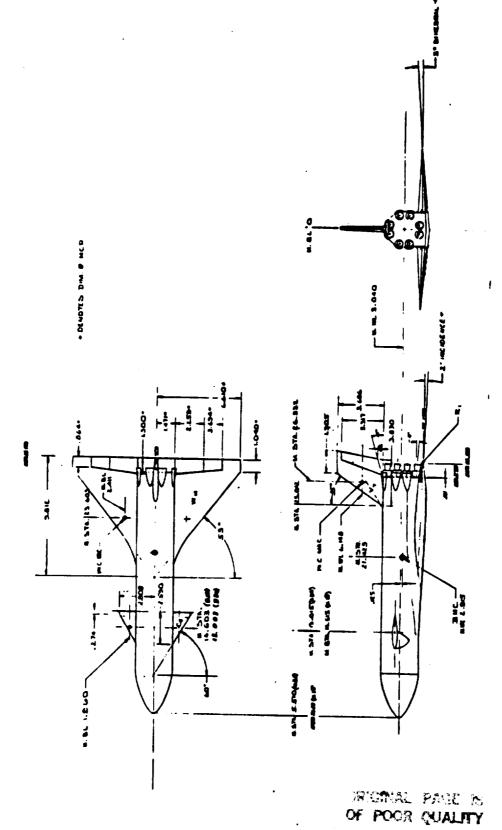


FIGURE 7. GDC B-15B-1 BOOSTER (.0076 SCALE)

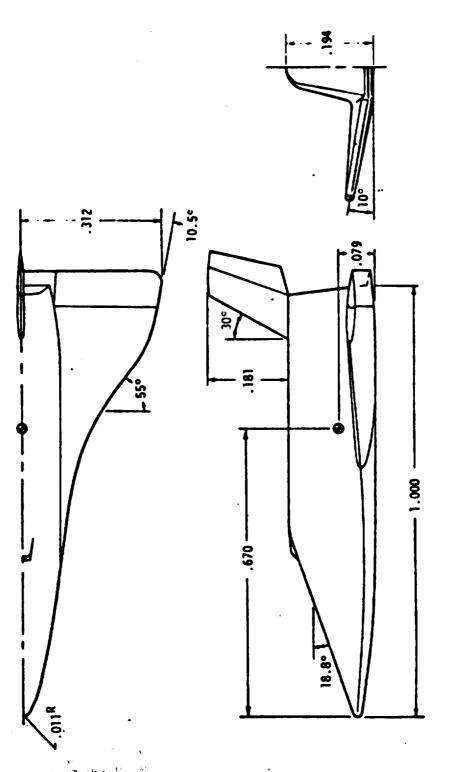


FIGURE 8. MDAC 0050B ORBITER MODEL SKETCH. ALL DIMENSIONS ARE IN TERMS OF BODY LENGTH

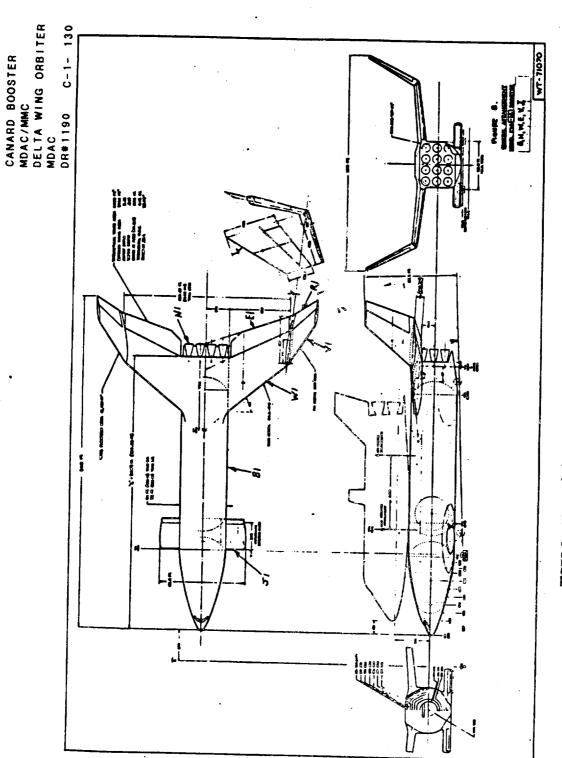


FIGURE 9. MIAC 256-14 BOOSTER WITH FULL SCALE DEGRISIONS

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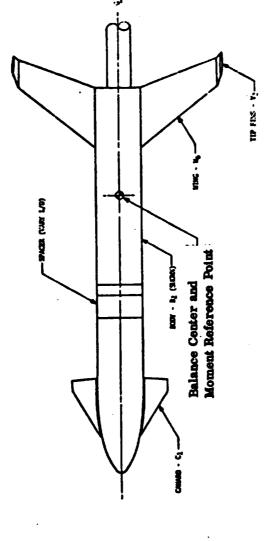
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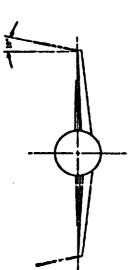
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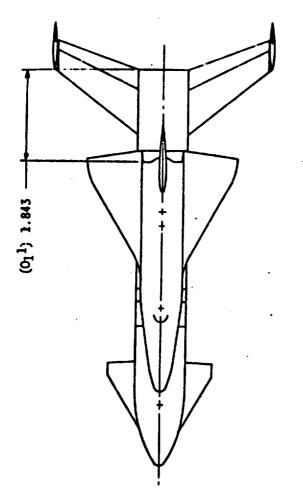


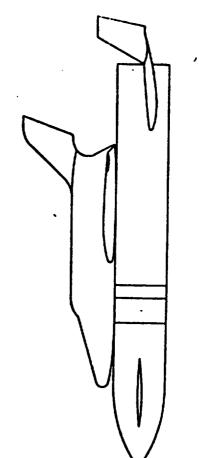


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FIGURE 5. 0.002456 SCALE AR1198I-1 BOOSTER NOISEL

FIGURE 6. GRATAN GS-A OBSITER RODY





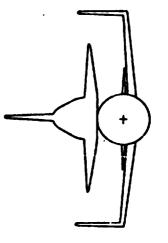
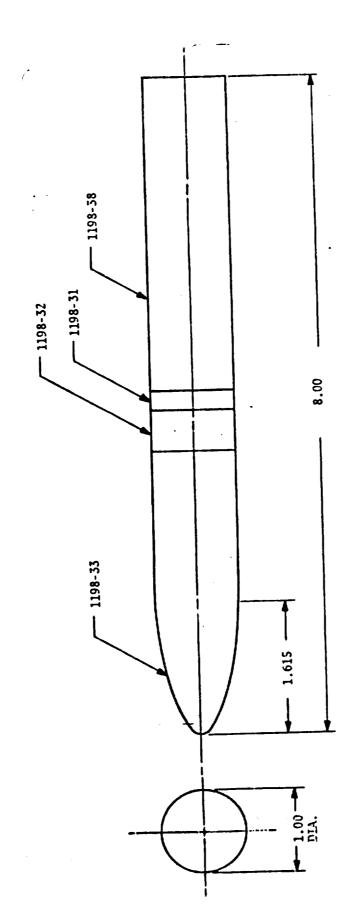
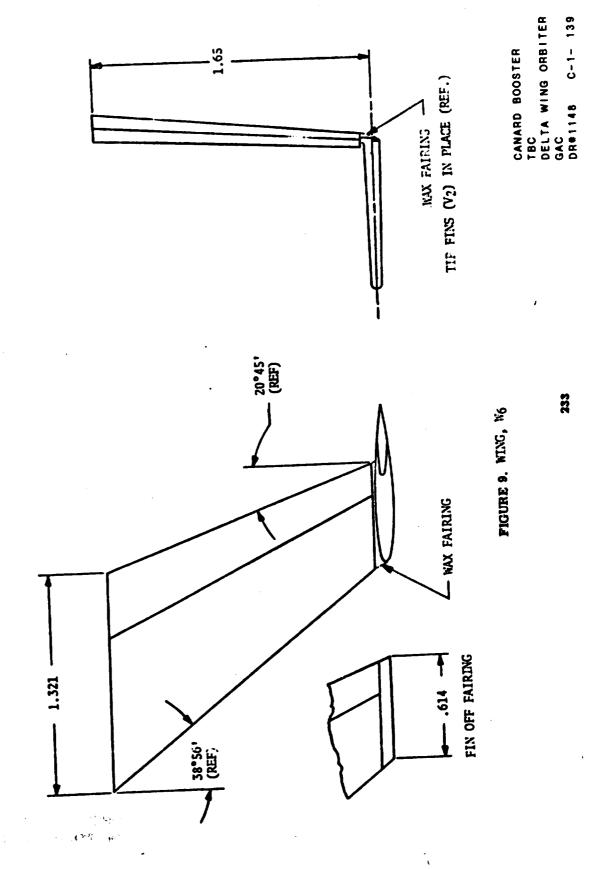


FIGURE 7. BOOSTER ORBITER CONFIGURATION



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FIGURE 8. AR-1198 BCDY B2



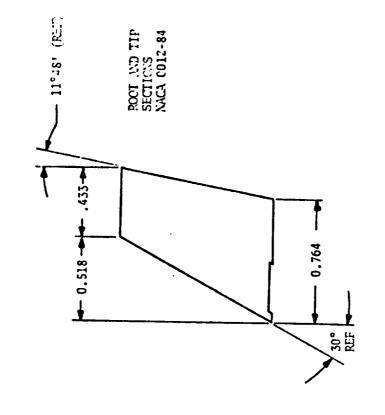
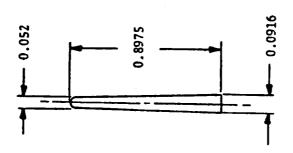


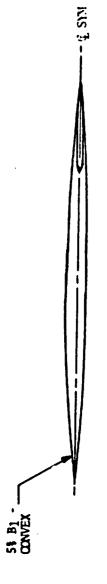
FIGURE 10. WING TIP FINS, V2



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FIGURE 11. VERTICAL TAIL VI CENTERLINE



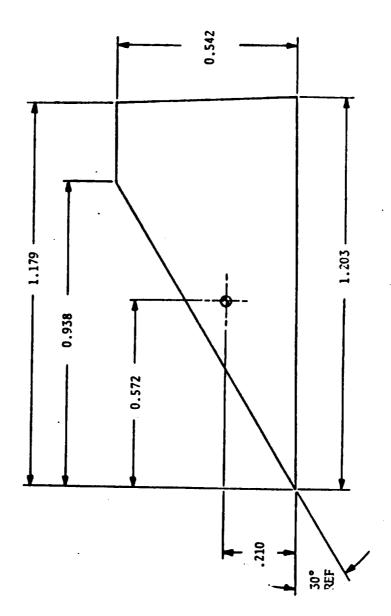
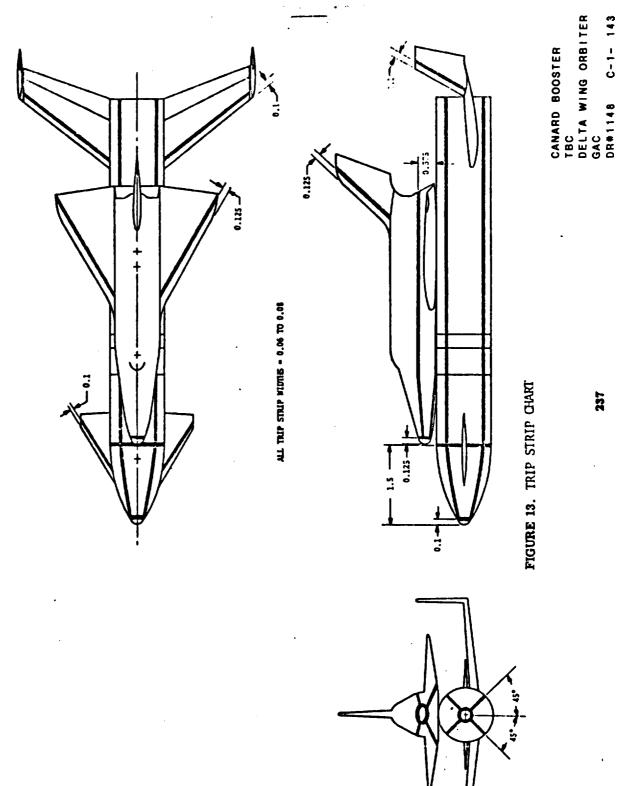


FIGURE 12. CWWD, C1



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TABLE I. (Concluded)
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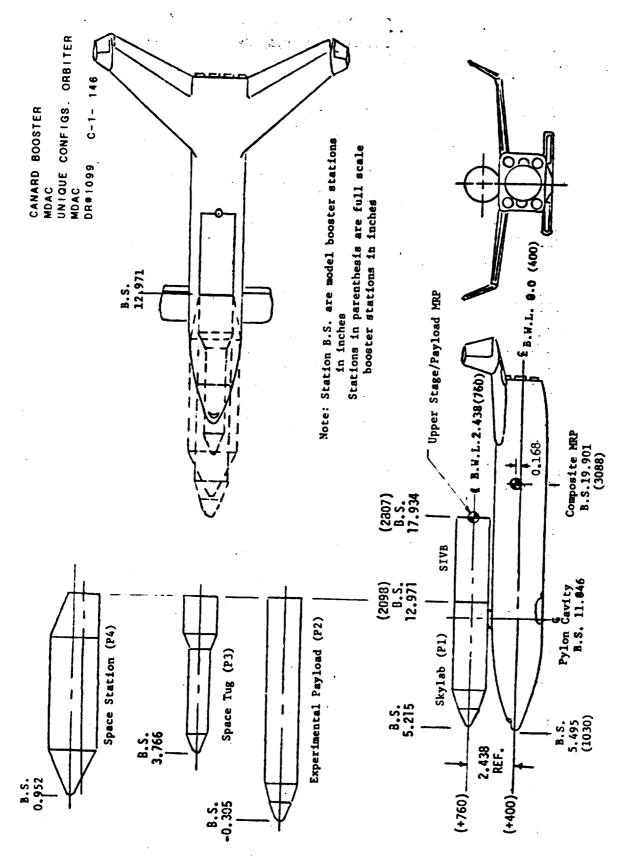
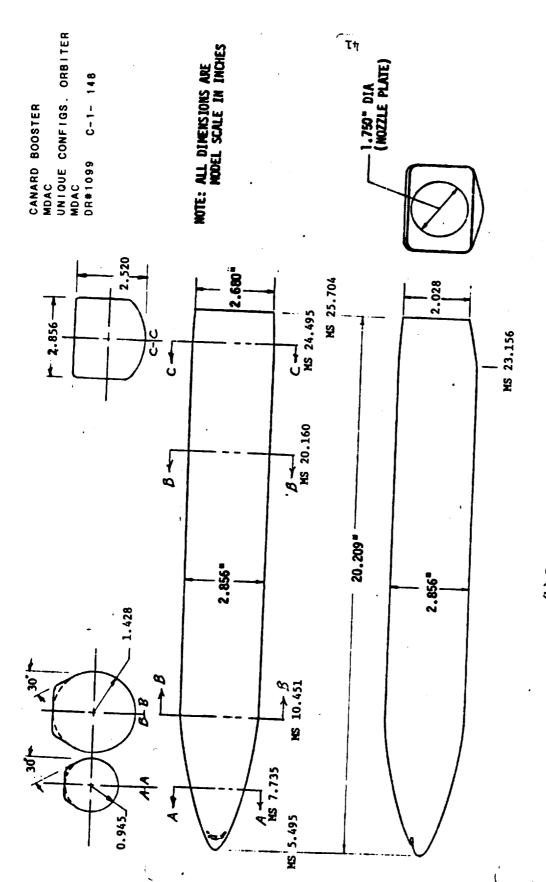


Figure B.- General Arrangement of Booster with Expendable Second Stage Plus Various Payloads

(a) Three View

Mgure D.- Space Shuttle Booster (LS)

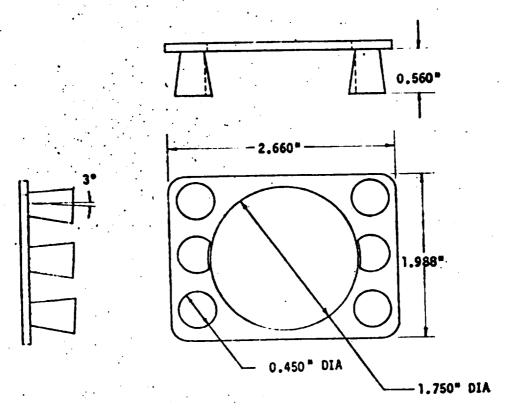
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DR#1099 C-1- 147



(b) Booster Body (B3)

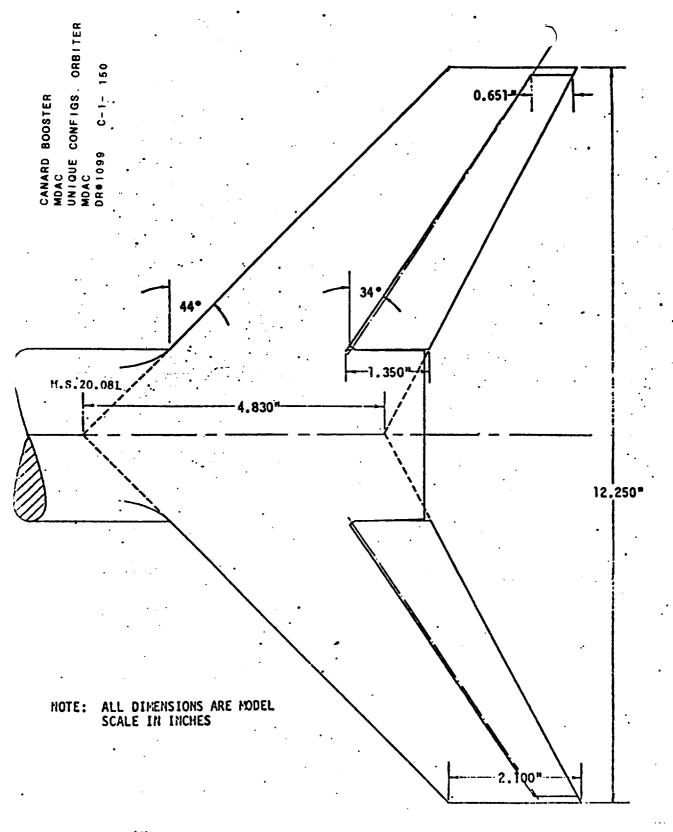
Figure D.- continued

NOTE: ALL DIMENSIONS ARE MODEL SCALE IN INCHES



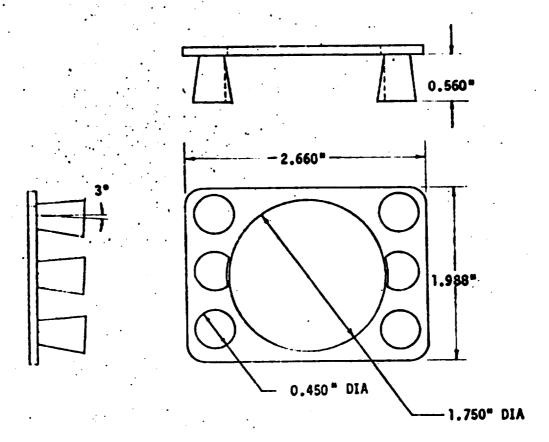
(c) Booster Nozzle Plate N12 Nozzles

Figure D.- continued



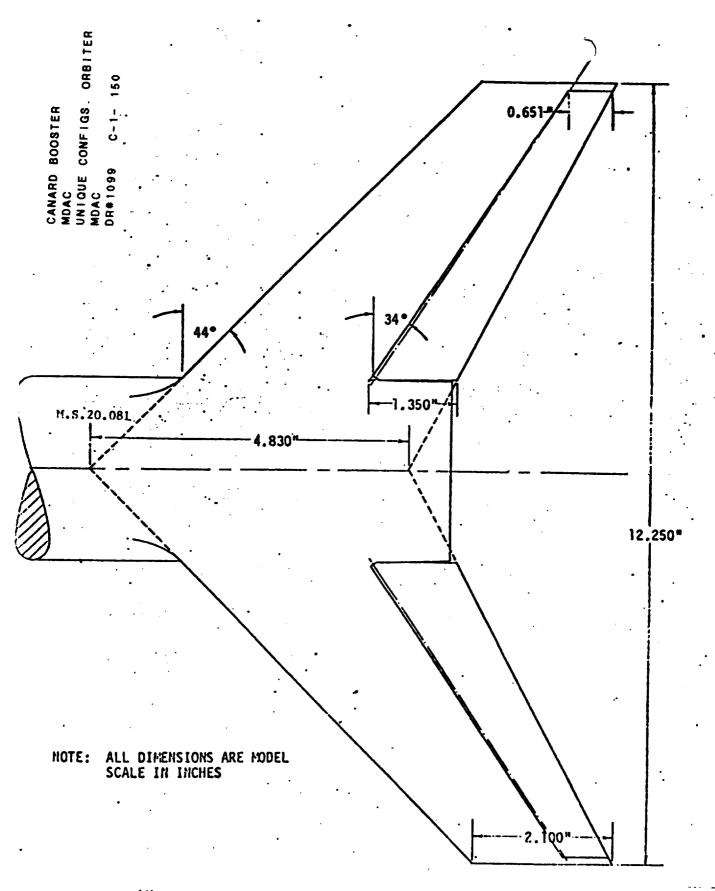
(d) Booster Wing (W5), Elevon (E3)
Figure D.- continued

NOTE: ALL DIMENSIONS ARE MODEL SCALE IN INCHES

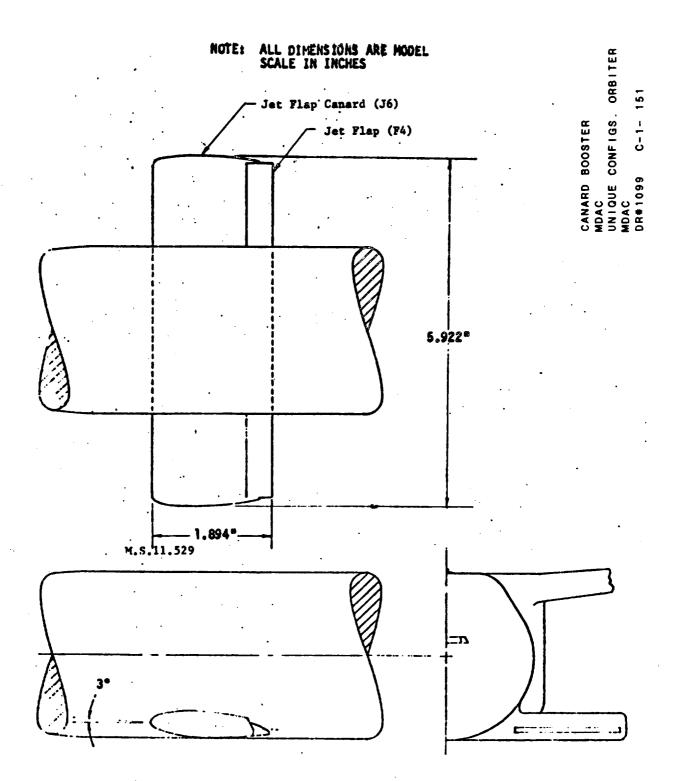


(c) Booster Nozzle Plate N12 Nozzles

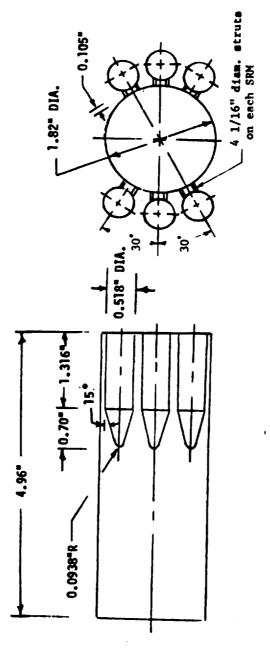
Figure D.- continued



(d) Booster Wing (W5), Elevon (E3) Figure D.- continued



(e) Booster Jet Flap Canard (J6), Jet Flap (F4) Figure D.- continued



Model dimensions in inches

Pigure B.- S-IVB Stage and Six SRM's (Q6S)

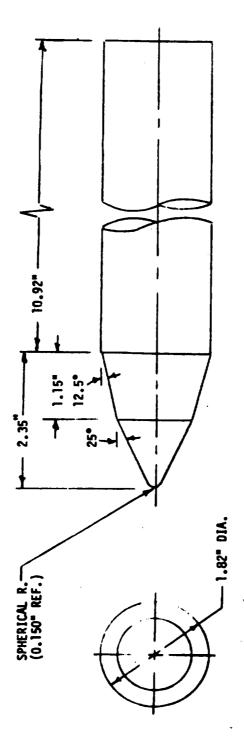
Model dimensions in inches

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Figure F.-Skylab (P1)

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Model dimensions in inches

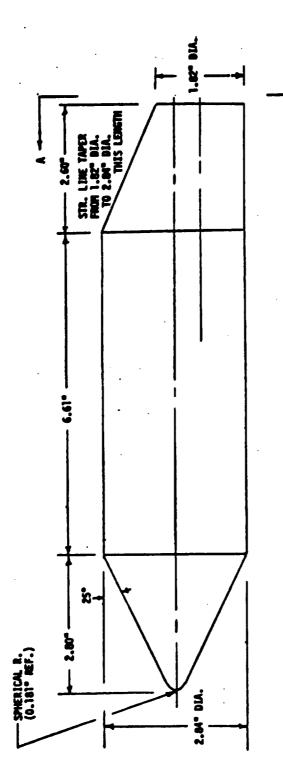
Figure G.- Experimental Payload (P2)

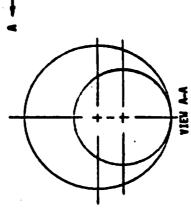
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Model dimensions in inches

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Figure H.- Space Tug (P3)





Model dimensions in inches

Figure I.- Space Station (P4)

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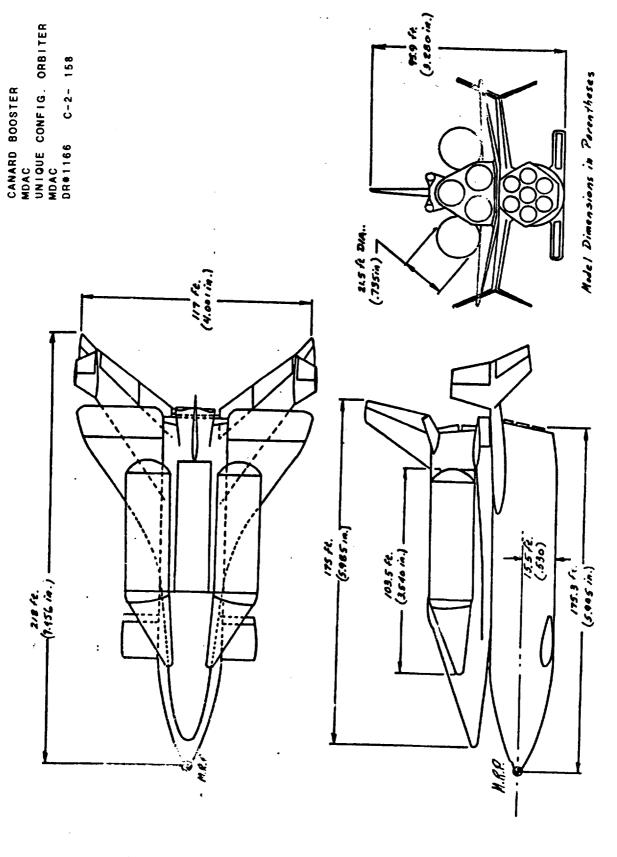
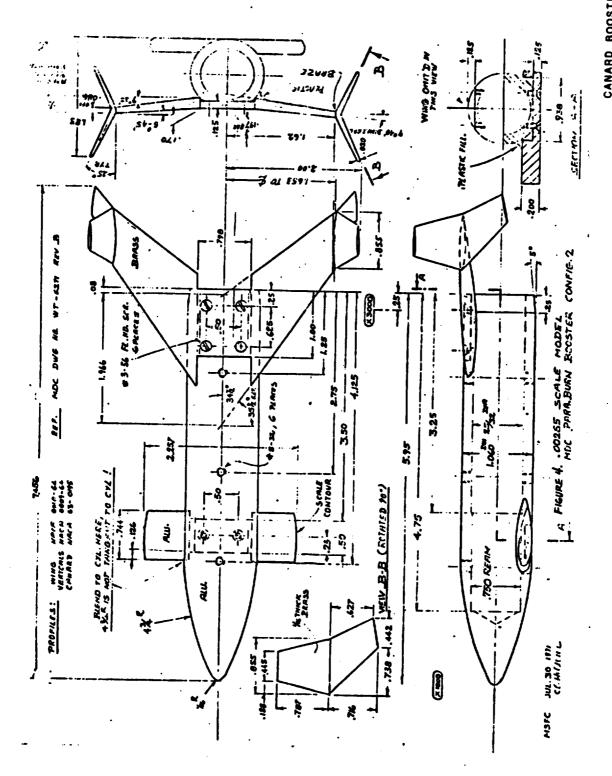
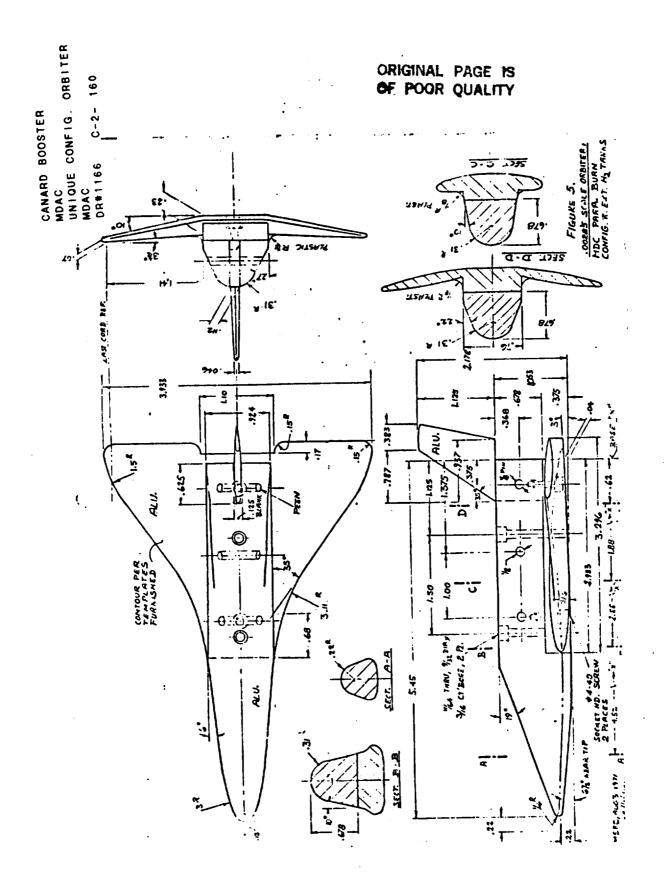
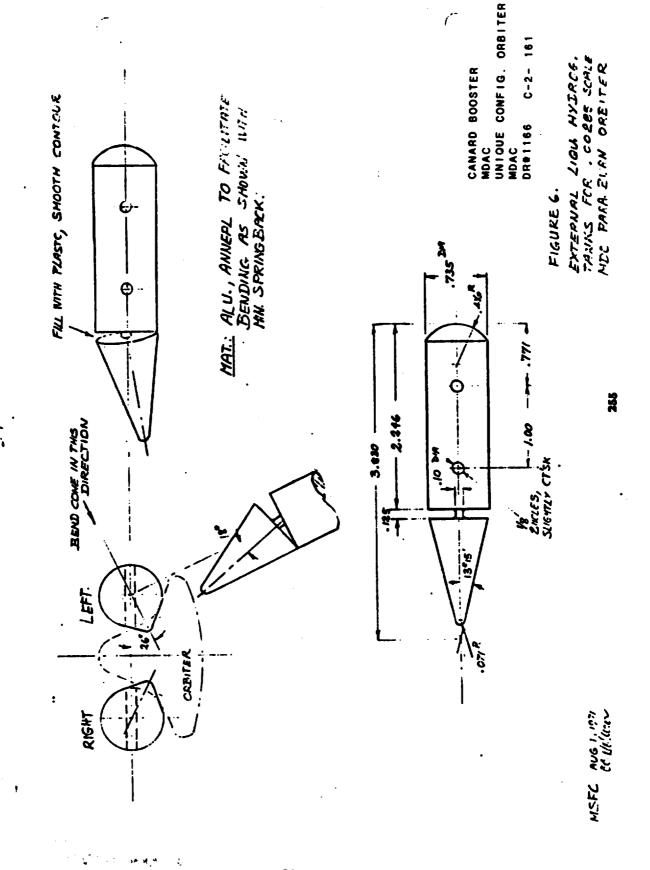


Figure 3: Launch Configuration Madel Geometry (L.)







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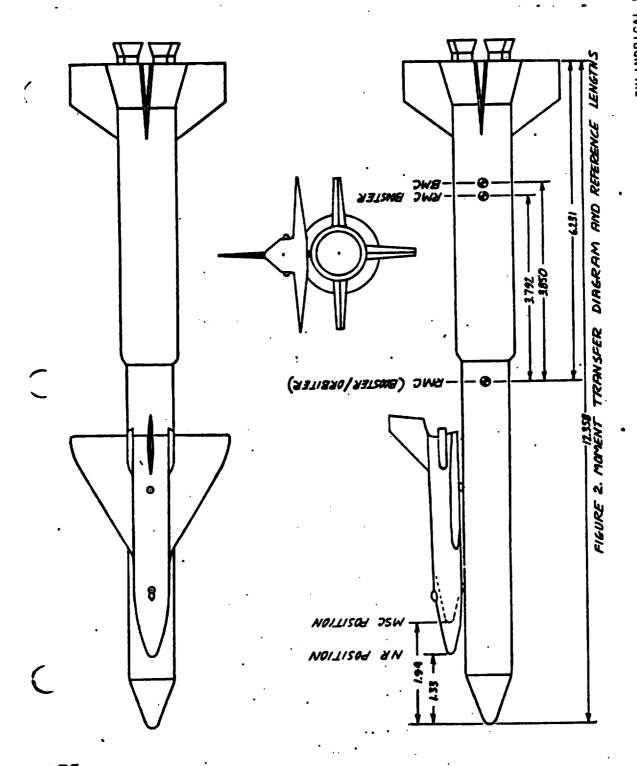
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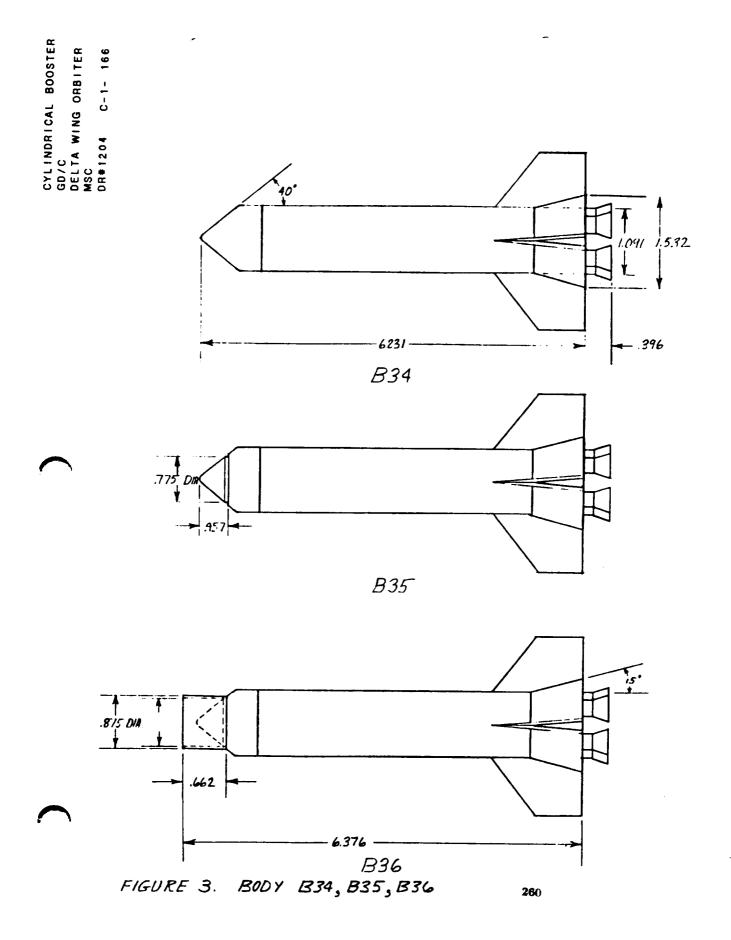
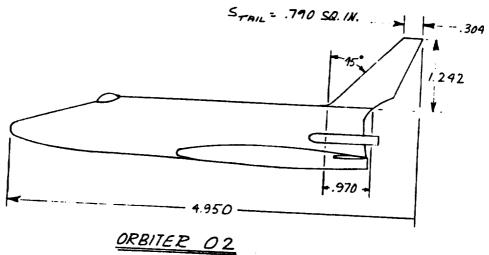
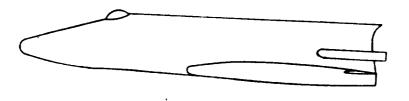


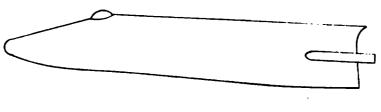
FIGURE 12. DRBITER 01

CYLINDRICAL BOOSTER GD/C DELTA WING ORBITER MSC DR#1204 C-1- 167





ORBITER 03



ORBITER 04

FIGURE 13. OR BITER 02,03,04

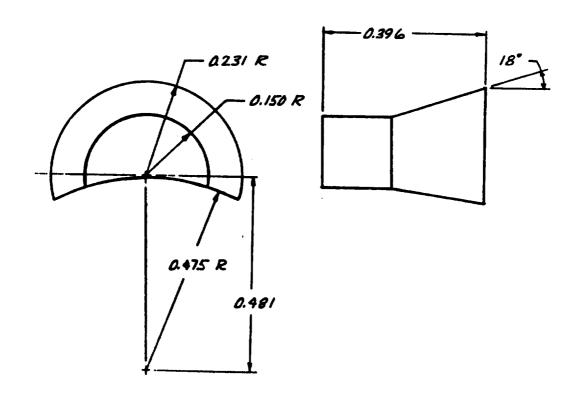
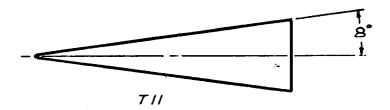
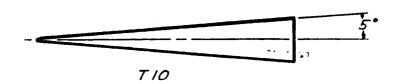


FIGURE 4. ROCKET ENGINE RG

CYLINDRICAL BOOSTER GD/C DELTA WING ORBITER MSC DR#1204 C-1- 170





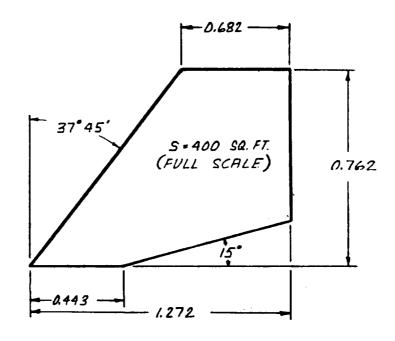


FIGURE 5. TAILS TID AND TIL



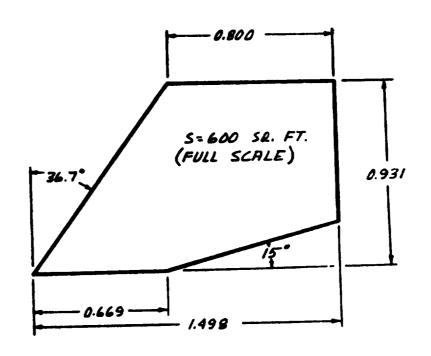
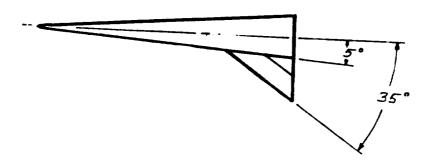


FIGURE 6. TAIL TI3



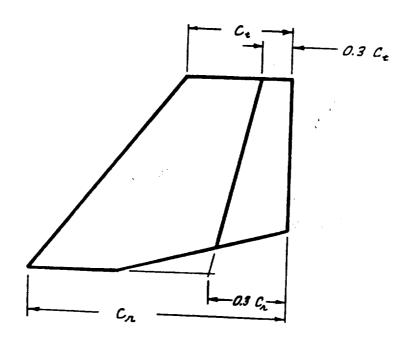
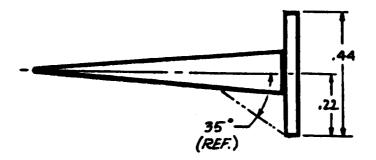


FIGURE 7. TAIL T14

CYLINDRICAL BOOSTER GD/C DELTA WING ORBITER MSC DR#1204 C-1- 173



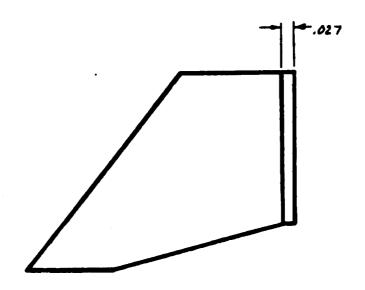
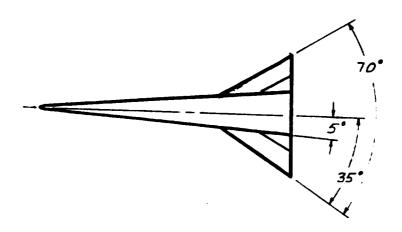


FIGURE & TAIL TIS



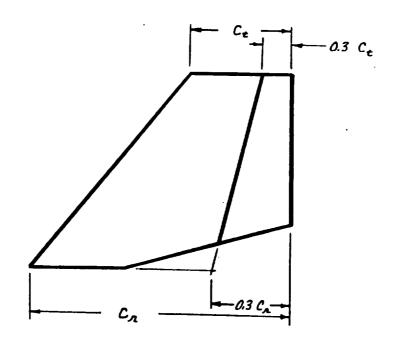
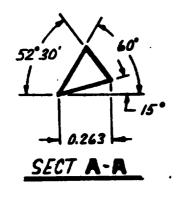


FIGURE 9. TAIL TIT



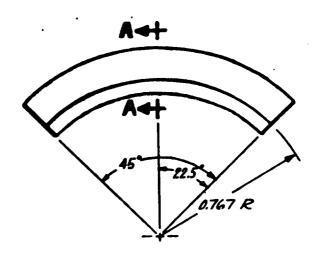


FIGURE 11 . DRAG SKIRT S3

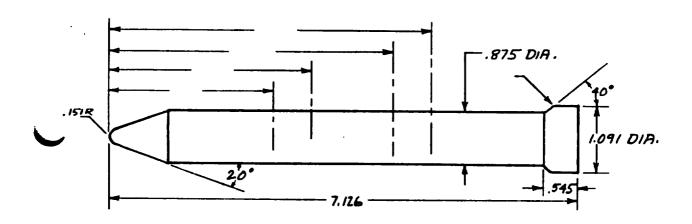


FIGURE 10. TANK T3

TEST MC. 516 DATA SET/RUN NUMBER

COLLATION SUMMARY

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CYLINDRICAL BOOSTER GD/C DELTA WING ORBITER MSC DR#1210 C-1- 178

TABLE II. (CONTINUED)

TEST MSR. S. L DATA SET/RUN NUMBER

COLLATION SUMMARY

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CYLINDRICAL BOOSTER GD/C DELTA WING ORBITER MSC C-1- 179 TEST RUN NUMBERS LIDEVAR(1) IDEVAR(2) HOU MCB RAGGES (OR ALTERNATE INDEPENDENT WALKBLE) DR# 1210 110 118 22 195 103 12d 200 Ş . 273 18 8 01 29 2 60 6 - 7 - 5 - 60 2 4 6 0 10 CHD. PARMETERS/VALUES NO. 04 25 0 Ö M 0 0 180 SCED. 9 530W23C10 VNL R30W13EDVIC CONFICURATION 3-186-3 COEFFICIENTS: 7 a or 8 Schedules DATA SET IDENTIFIED 310 82.30 8332

TABLE II. (CONTINUE)

TEST MOR- 51 L DATA SET/RUN NUMBER COLLATION SUMMARY

A POSTTEST O PRETEST

TEST MS-374 DATA SET/RUN NUMBER

COLLATION SUMMARY

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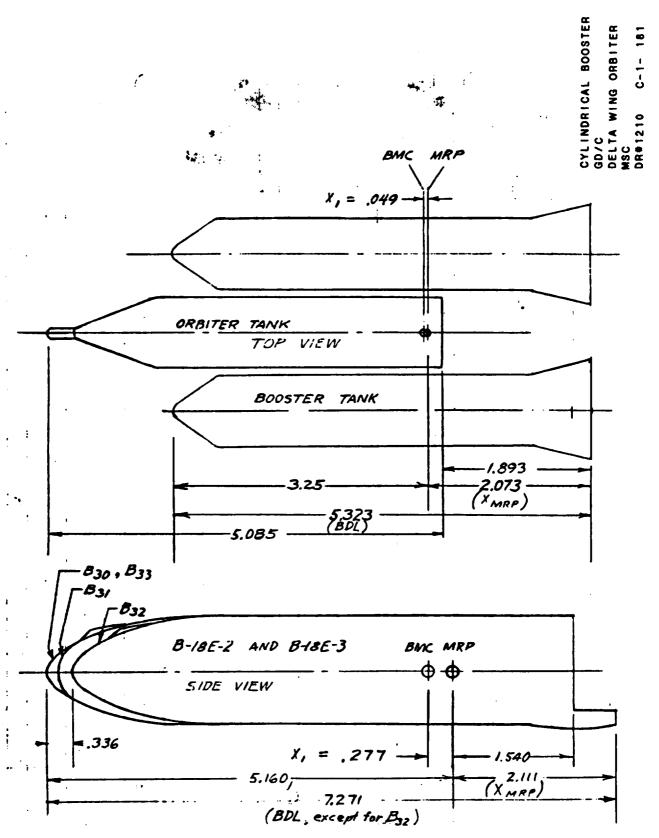


FIG 2. POSITIONS OF MOMENT REFERENCE POINTS

CYLINDRICAL BOOSTER GD/C DELTA WING ORBITER MSC DR#1210 C-1- 182

54515 B-18E-2 = B30 W23 -13 14

BASIC 3-18E-3 = B33 W25 VIG B32 WITHOUT THIS SECTION -B30, B33

B-18E-2 AND B-18E-3, 3-VIEWS AND MODEL COMPONENT F16 3.

340A ORBITER

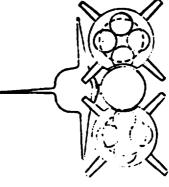
OR B37 R7 T19 05 T4

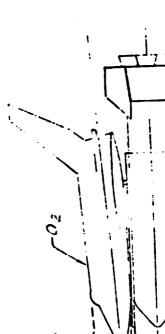
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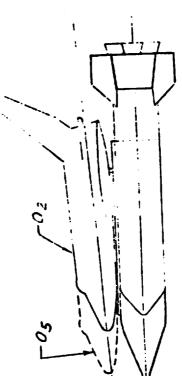
-WINDSHIELD AROUND BALANCE

. R7

CONTLETE CONTIGE BATRATIODETA





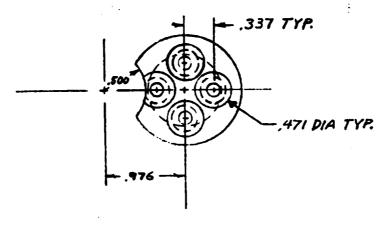


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AND TWIN PRESSURE FED BOOSTENS

LAUNCH PHASE CONFIGURATION

F16



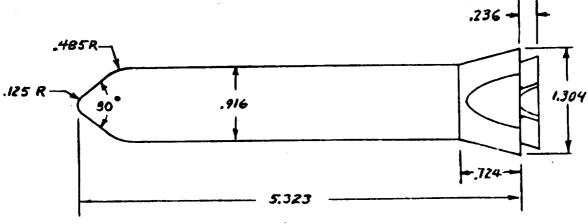
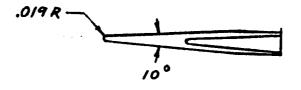


FIG 7. BODY B37 AND ROCKETS R.



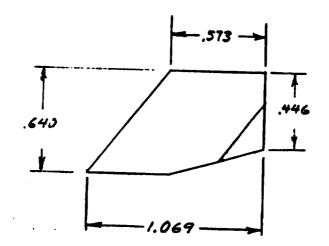


FIG & TAIL FIN TIP

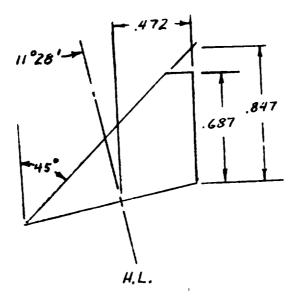
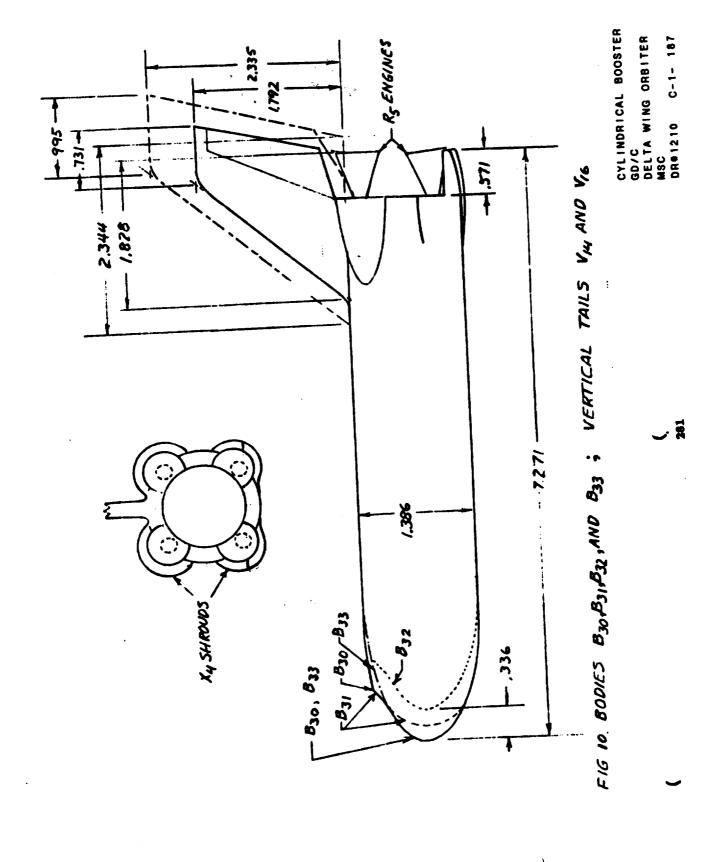


FIG 9. CANARD CIO



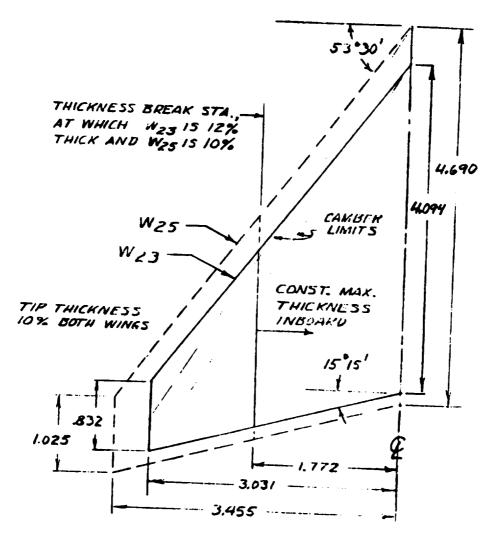
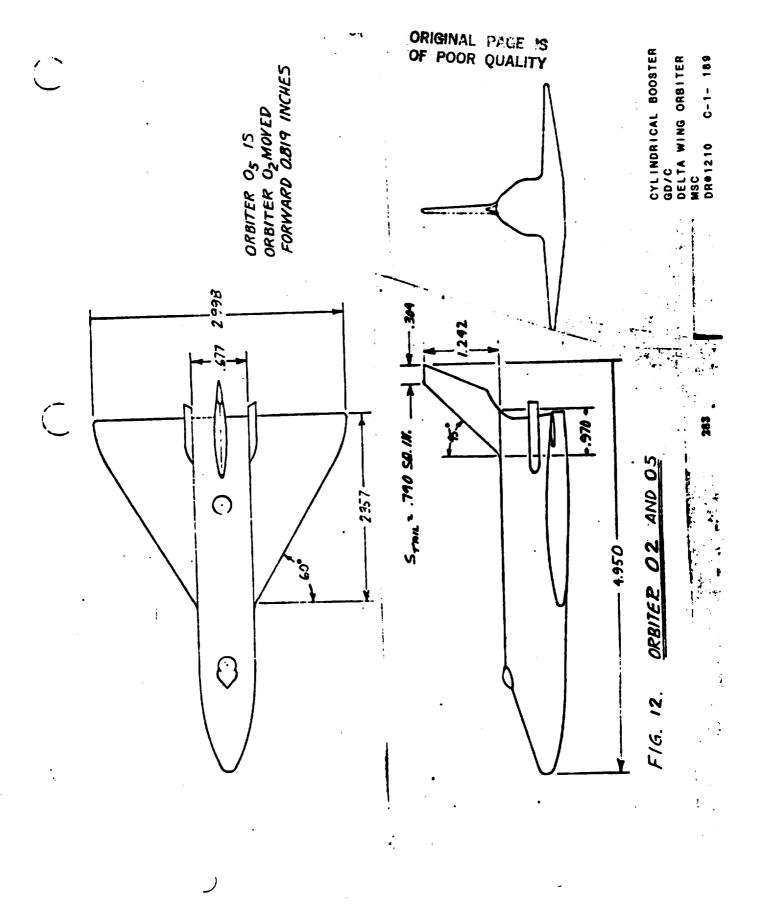
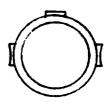
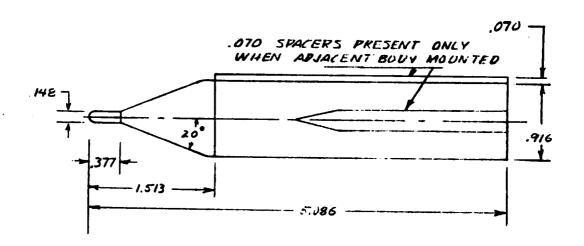


FIG II. WINGS WZ3 AND W 25



CYLINDRICAL BOOSTER GD/C DELTA WING ORBITER MSC DR#1210 C-1- 190





File. 13. TANK T4

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BX - BOTH LEFT ORICHT BOISTIERS - |IDPVAR(1)|IDPVAR(2)|NDV POSTTEST PRETEST MACH. 18 2. 14 BKR . RICHT BOOSTER BXL- LEFT Bustien 240 1,42 243 264 45.0 265 4.5 243 245 266 tri-25 15 2.2 2.25 (BAX) BUSTER ISOLATED W. THOUT M. BALAWE. (AI) ORBITER ISO-ATED ON SEPARATE GALANCE. <u>-</u> 230 422 215 255 955 227 226 752 22% 151 25.2 255 221 7.74 255 202 205 306 254 5.5 MACH NUMBERS DATA SET COLLATION SHEET 375 375 300 35% 343 343 3.5 37.7 6.98 394 39.4 0.45 1.05 1.1 CYLINDRICAL BOOSTER DELTA WING ORBITER C-1- 191 S 34.2 392 396 340 0.6 6.9 374 18% 387 395 395 37.4 37// 2 396 394 341 373 168 DR#1230 FIN MDAC 0.4 37 RUNS 9 m 0 ų 7 3 M 11 7 M N m 4 И M 7 2 640 CONTROL DEFLECTION = 0 S 0 0 0 Ö 0 0 0 'n 0 0 0 O 3 0 0 0 0 10.84 7-10°0 -100 A 200 5-225 3 100 0 ٥ 0 0 Ġ Ċ 0 O Ó 0 0 ٥ 0 ٥ .7 Ċ o ORBITER & ORBITER MAC Ò 0 C| 0 20 0 0 0 0 Ö 0 0 0 0 ٥ ٥ 0 0 0 0 3 KAF 40 OD 7 90 8 A V 0 A ويا 0 J 9 L v 01-0 U P SCHD. TEST T ¢ स 0 T **ヤ** 0 T 0 ₹ A O 7 T (P1) T1 (83L) B3R (41) TI BZL (BZR) (¢1) 71 B3L (B3K) (41)T1 (BZL)BZR (BIR) 10 (4) TI (81L) BIR م کا TABLE 2. UA Ø CONFICURATION (41) 71 83 7182 B (41) TI BIL F COMPFICIENTS: -(j 7 É SCHEDULES 120 77 501 2 or 8 108 113 ? 162 107 601 163 631 73/ DENTIFIER KD7101 6// 111 DATA SET -

FIFE CONFICURATION Sculp. Control Distriction Fife Fig. Confidence Fife	(\$\phi_1 \tau \text{CONFICURATION} \\ \frac{\alpha}{\alpha} \text{ (\$\phi_1 \text{T} \text{ B4} \text{ B4} \text{ B4} \text{ B4} \text{ CONTROL} \\ \frac{\chi}{\chi} \text{ CONTROL} \\ \frac{\chi}	2 2 2 2 4 3 3 - 6 RUNS	370	37. 13. 13. 13. 13. 13. 13. 13. 13. 13. 13	5. 22. 70	3.25	PRETEST POSTTEST	
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7 (854) 848	(\$\phi\)\7\(8\\alpha\)\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	N N N 7	370	(E)	0,10		9 0	
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	CLENIS					IDPVAR(1) ID	PVAR(2) NDV	

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DATA SET COLLATION SHEET (CONTINUED)

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TABLE 2. TEST

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CYLINDRICAL MDAC DELTA WING	MSC DR#1230	OPRETEST	TOSTTES		14.5		-									-	<u> </u>		35	2/2	3.6	280		3//	314	- 19			S-41 DEVAR(2) NDV			
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DATA SET COLLATION SHEET (CONTINUED)

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TABLE 2. TEST

CYLINDRICAL BOOSTER DATA SET COLLATION SHEET (CONTINUED, MSC.) 1 (E FOSTTEST - PRETEST 525 52.8 SCE MDAC 525 2.25 4.5 175 075 0.40 0.45 1.05 1.1 1.5 2.2 5,9 520 561 49-513 MACII NUMBERS 499 498 CONTROL DEFLECTION NO. Q 'n m m 0 0 ن 0 0 5-225 S 0 0 0 0 Ċ 0 Ġ Ċ 9 00 SCilb. 9 0 9 TEST Ö 4 (\$ 1) TY B7A1-5 172A BS (divi) 72 85 TABLE 2. CONFICURATION

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DATA SET IDENTIFIER

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COEFFICIENTS:

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5-222 TEST

O FOSTIEST O PRETEST DATA SET COLLATION SHEET (CONTINUED) MACH NUMBERS SCHD. CONTROL DEFLECTION NO. TANK & BOSTERS @ TANK MRC. NOTE: SAME AS TABLE 2. DATA SETS CONFIGURATION RD71XX DATA SET IDENTIFIER 202 202 203 205 202 204 210 213 217 252 RP7201 707 266 212 215 218 17 214 214 712

CYLINDRICAL BOOSTER MDAC DELTA WING ORBITER MSC DR#1230 C-1- 199 200

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COEFFICIENTS: <u>C.Y.</u> C.Y.

a or b SCHEDULES

5-2-2 TEST

ORBITER @ TANK MRC

TABLE 2.

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DATA SET COLLATION SHEET (CONTINUE MSC

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& POSTTEST - IDPVAR(1) IDPVAR(2) NDV MACH BETH MACH NUMBERS 6 3 EYK 37 CONTROL DEFLECTION OF OF RUNS CLM 31 16,87 2.5 SCIID. EAF NOTE: SAMEAS DATA SEIS CONFIGURATION RD71XX Z/V 10/ COEFFICIENTS: a or 6 SCHEDULES DATA SET IDENTIFIER 303 305 306 307 308 RP1301 363 304 309 310 320 312 313 314 315 \$10 317 312 319 3//

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5-222 TABLE 2. TEST

COMPUSITE @ TANK MRC.

DATA SET COLLATION SHEET (CONTINUED)

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CYLINDRICAL BOOSTER MDAC - IDPVAR(1) IDPVAR(2) NDV MACH BETA MACH NUMBERS 22 4 -EXM 37 CONTROL DEFLECTION NO. FLM 3 16.84 CAE SCIID. 8 NOTE. Sume AS DATA SETS Q. CONFICURATION RD71XX COEFFICIENTS: SCHEDULES DATA SET IDENTIFIER 720 a or b 413 403 427 408 469 410 4/2 414 514 111 404 405 407 11/4 416 413 416 RD7401 **≯**

DELTA WING ORBITER MSC DR#1230 C-1- 201

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A SET COLLATION SHEET (CONTINUED)

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CYLINDRICAL BOOSTER

DELTA WING ORBITER MSC DR#1230 C-1- 203

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DATA SET COLLATION SHEET (CONTINUED) MSC C-1- 204 E TOST TEST 75 76 -IDPVAR(1) IDPVAR(2) NDV O PRETEST DR#1230 0,4 0.6 0.9 0.85 1.05 1.1 1.5 7.2 2.35 4.5 67 433 438 441 440 4+1 44c 443 443 444 447 784 584 435 430 439 443 448 442 434 444 447 74.7 445 444 446 5 445 444 455 755 75.7 454 453 MACH NUMBERS 55 **.** CONTROL DEFLECTION NO. N 212 Ν ? N N 01 0 9 10 0 10 1 9 Ĵ 0 0 0 5-22 2 0 Э 0 9 C ù 0 Ċ 'n 3 Ċ 0 Ō 20 20 0 20 O i ç. 0 (C Ċ ·J 2 Ó 0 A è Ü 0 O 0 0 0 0 0 0 A SCHD. 0 0 0 O S Ċ t, A Ü TEST 0 ٥ ₹ Ö T 7 ८ ₹ Ö ٥ さ \$17386+Purile (1.5) 41 TIBIT RUME (1.5) ď CONFICURATION TABLE 7386 T3 RZ 73 85 é COEFFICIENTS: **830-528** a or b SCHEDULES DATA SET IDENTIFIER 543 RD7541 542 545 576 547 545 549 550 552 544 553 556 5,00 554 558 555 557 559 5.51

CYLINDRICAL BOOSTER

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DATA SET COLLATION SHEET (CONTINUED MSC

C-1- 206 DR#1230

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830-528

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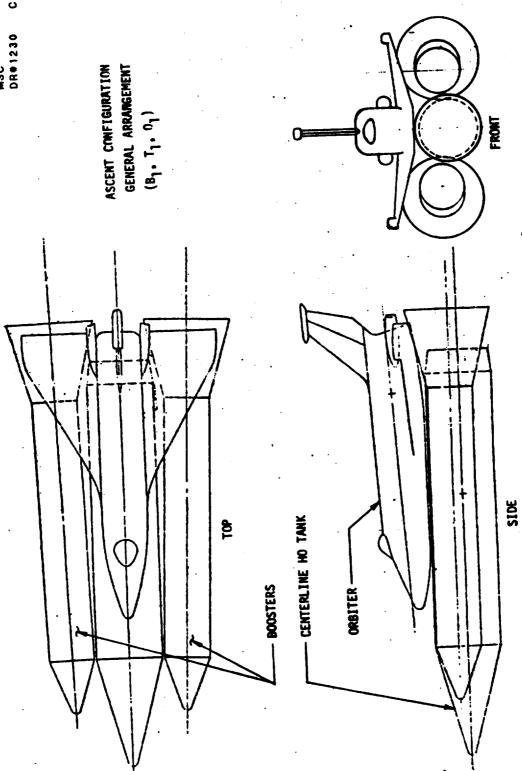


Figure 4. General Arrangement-Ascent Configuration OrTrB1

B2 AND B2S BOOSTERS LOCATION

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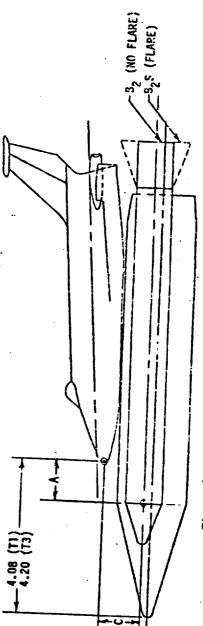
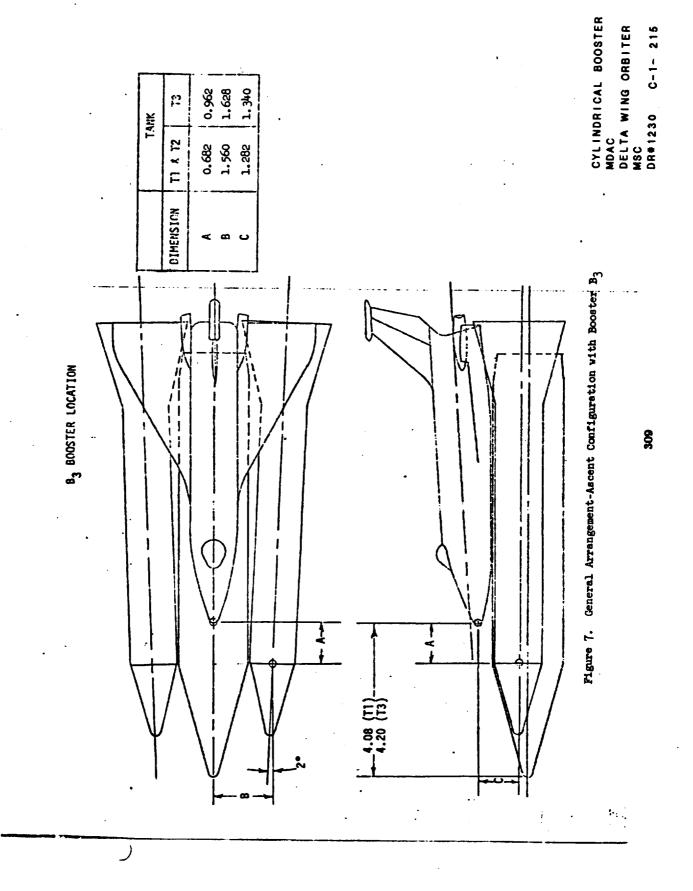
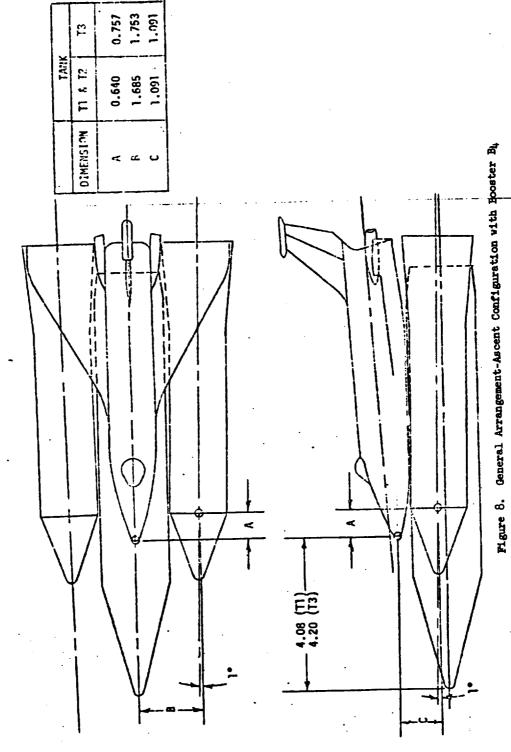


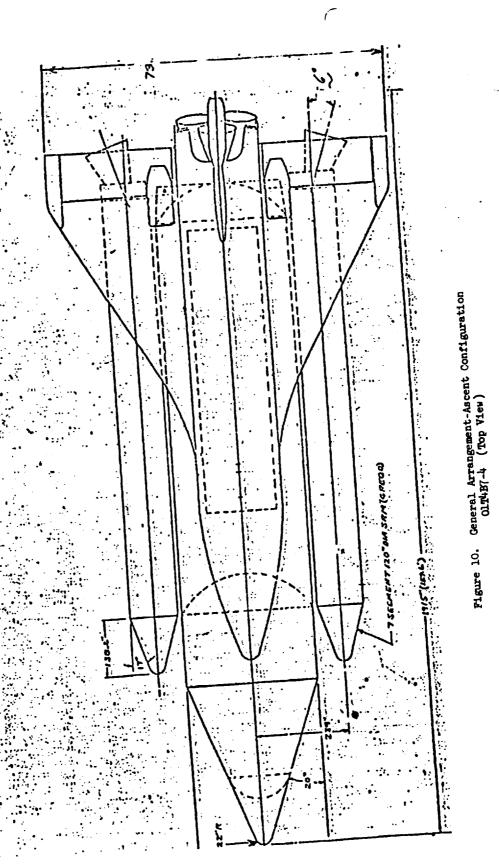
Figure 6. General Arrangement-Ascent Configuration with Booster B2 or B28



BA BOOSTER LOCATION



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Figure 11. General Arrangement-Ascent Configuration OlT4B7-4 (Rear View)

Orbiter Nose x (200) 1.200

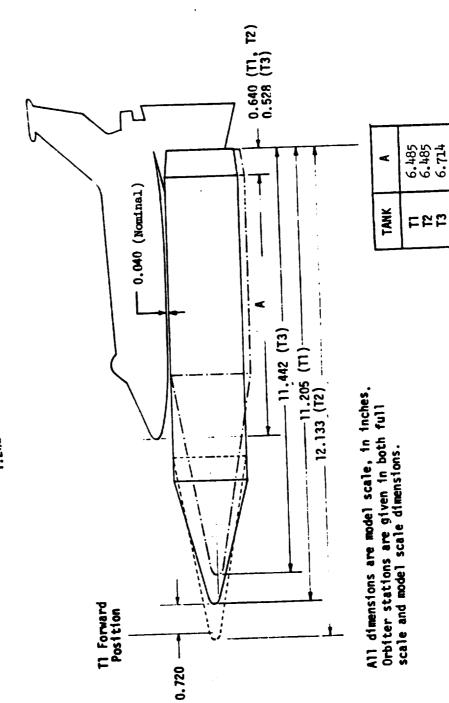
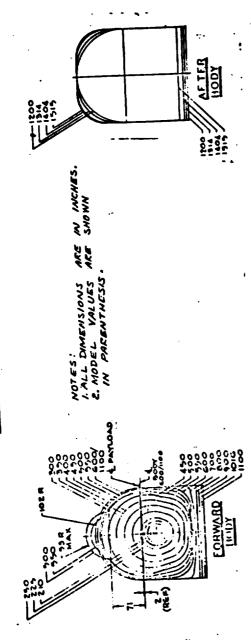
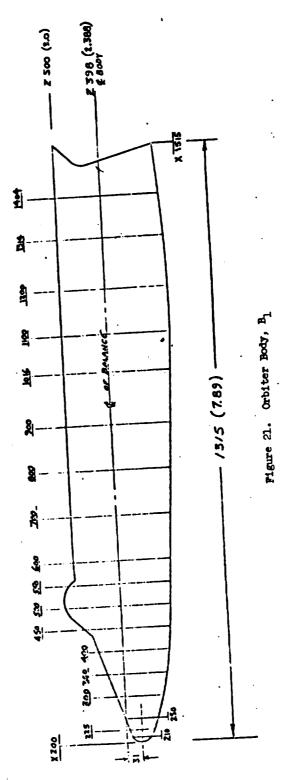


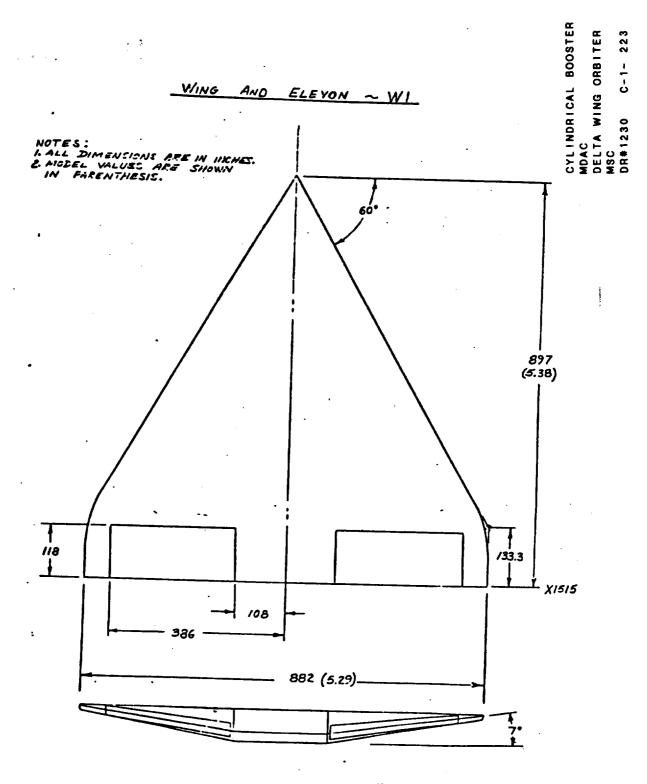
Figure 12. Centerline HO Tank Locations

GENERAL ARRANGEMENT 040A 098TTER



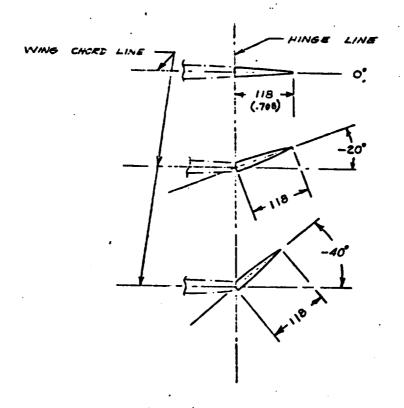


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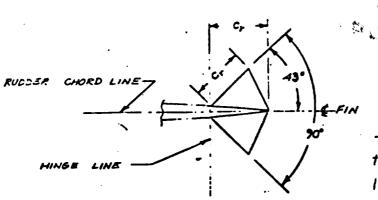


.. Figure 22. Wing and Elevon, W1

ELEVON DEFLECTIONS



RUDDER FLARE AT A TYPICAL SECTION



NOTES:

1. DIMENSIONS ARE IN INCHES

2. Cp. IS RUDDER LOCAL

3. CHORD.

3. MODEL VALUES SHOWN IN PROSPECTE

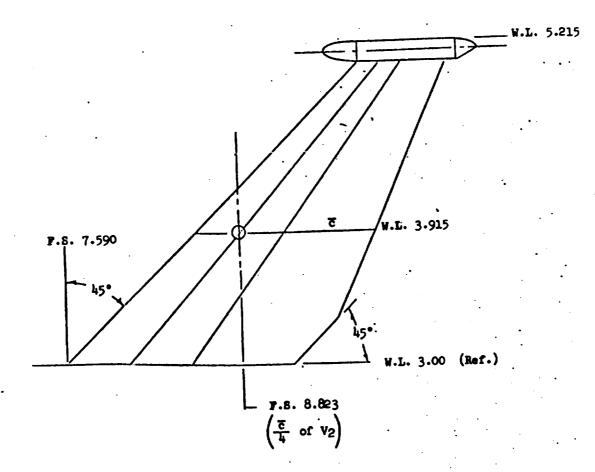
Note: Additional rudder flare angle of ±17.5° was tested at 12: .6, .9, 1.2 for lateral-directional data

Figure 23. Elevon Deflections and Rudder Flare

MDAC DELTA WING ORBITER MSC DR*1230 C-1- 225 CYLINDRICAL BOOSTER 23.7 270 (1.620) 183 (1,038) - 659-- 43.8 X1553 \$ - 115 NOTES: 1. ALL DIMENSIONS ARE IN INCHES. 2. MODE VALUES ARE SHOWN IN PARENTHESIS. - (221) -X 1265

Figure 2^{4} . Vertical Fin and Rudder, V₁

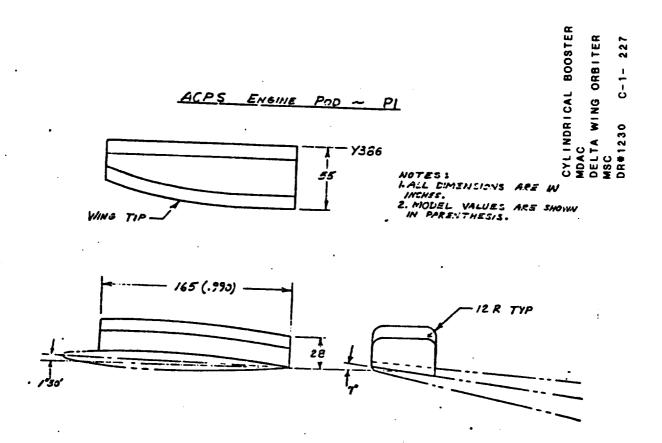
$$B_V = 2.514 \text{ in}^2$$
 $C_R = 1.728 \text{ in}$
 $C_T = 0.542 \text{ in}$
 $\bar{c} = 1.239 \text{ in}$
 $AR = 1.95$
 $C_R = 1.728 \text{ in}$
 $AR = 45^\circ$



Note: All dimensions are model scale in inches.

Figure 25. Vertical Fin and Rudder, V2

AIGUANNELL DOUGLAS CORPORATION





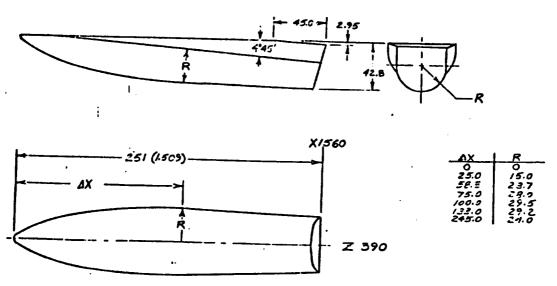
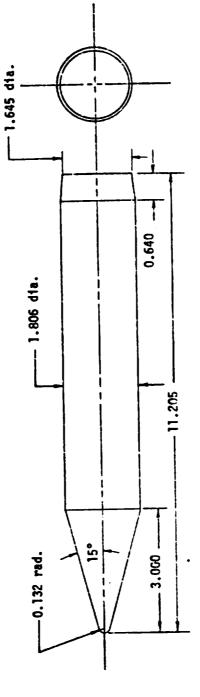


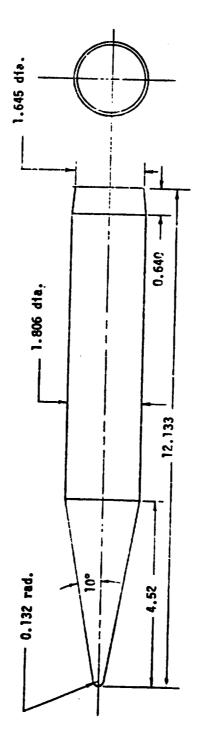
Figure 26. ACPS Engine Pod, Pl and OMS Engine Pod, Ml

HO TANK, T



All dimensions are model scale, in inches.

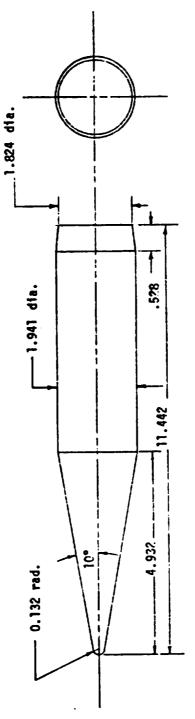
Figure 27. Centerline HO Tank, TJ



All dimensions are model scale, in inches.

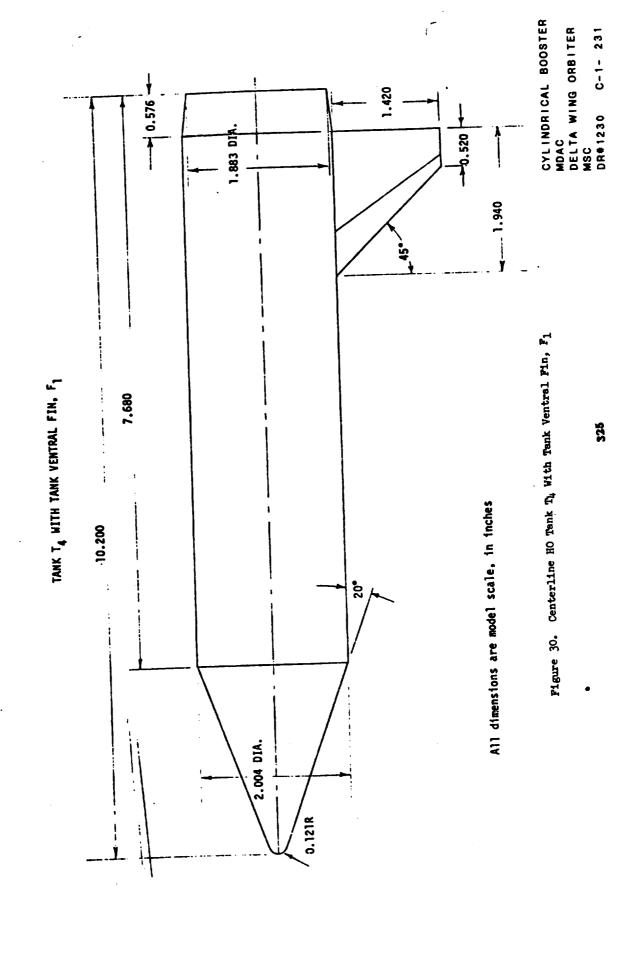
Figure 28. Centerline HO Tank, T2

HO TANK, T



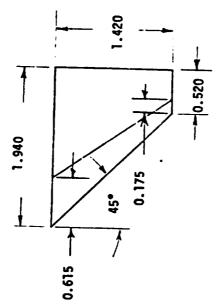
All dimensions are model scale, in inches.

Figure 29. Centerline HO Tank, T3



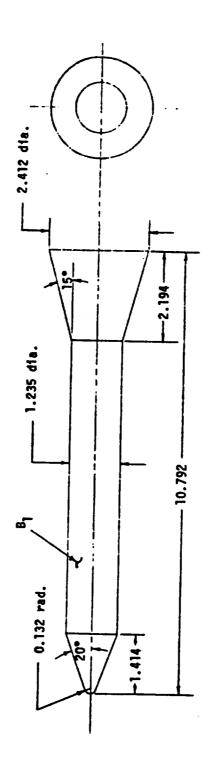
CYLINDRICAL BOOSTER MDAC DELTA WING ORBITER MSC DR#1230 C-1-232

TANK VENTRAL FIN, F



All dimensions are model scale, in inches

Figure 31. Centerline Ventral Fin, F_1



All dimensions are model scale, in inches.

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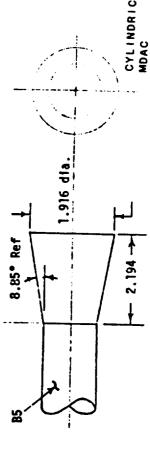


Figure 32. Boosters, B, and B5

CYLINDRICAL BOOSTER MDAC DELTA WING ORBITER MSC DR#1230 C-1-233



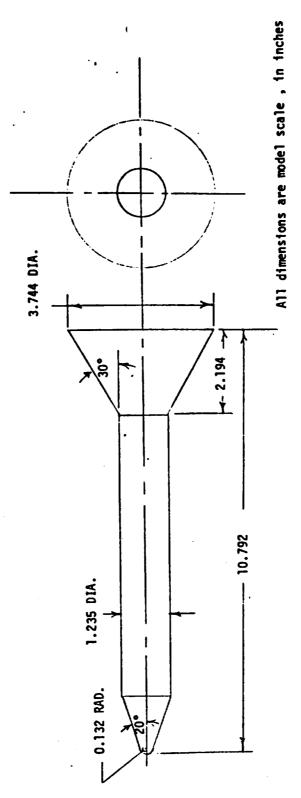


Figure 33. Booster, B₁S₁

Hgure 34. Booster, B1S2

All dimensions are model scale, in inches

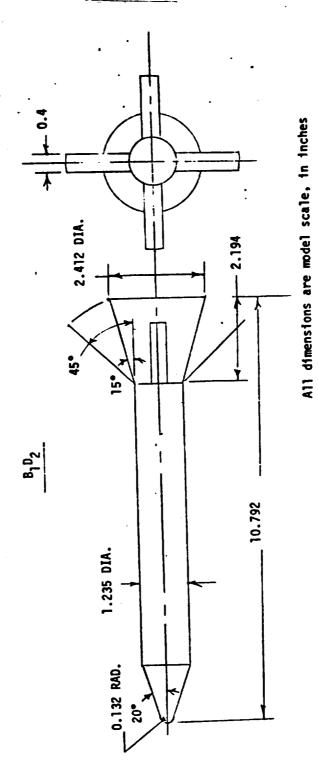


Figure 35. Booster, B₁D₂

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Figure 35. (Continued)

All dimensions are model scale, in inches

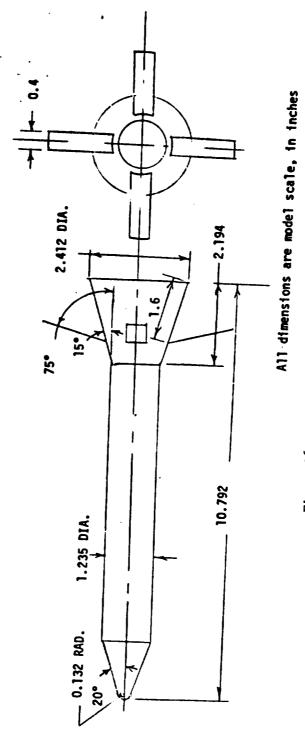
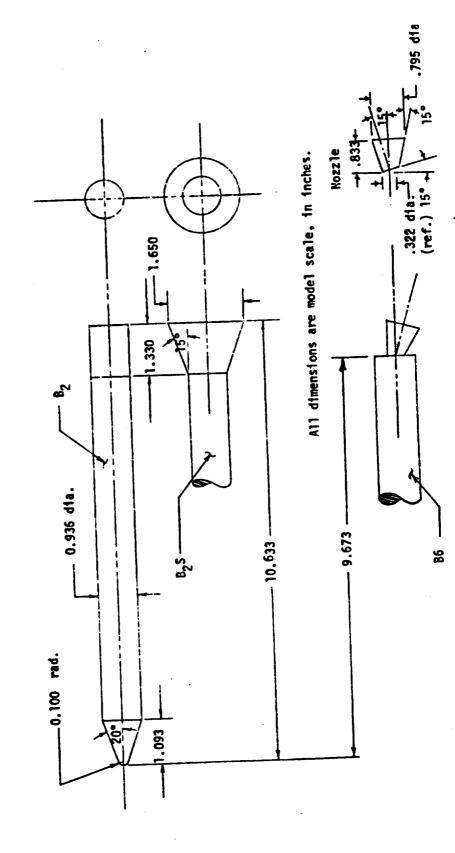


Figure 36. Booster, B₁D₆

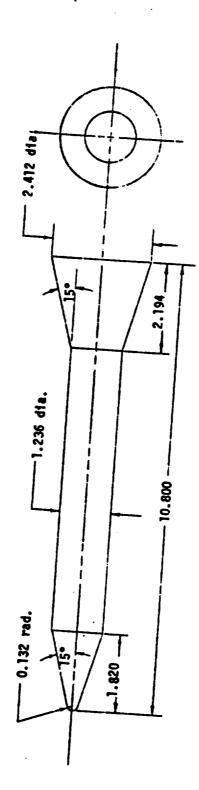
Figure 37. Booster, BlD7

- All dimensions are model scale, in inches

BOOSTERS, B2 & B2S & B6



Hgure 38. Boosters, B2, B2S & B6



All dimensions are model scale, in inches.

Figure 39. Booster, B3

BOOSTER. B4

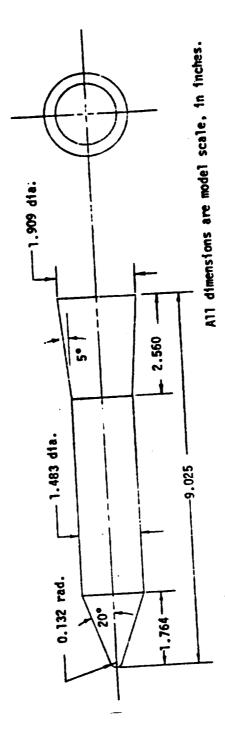
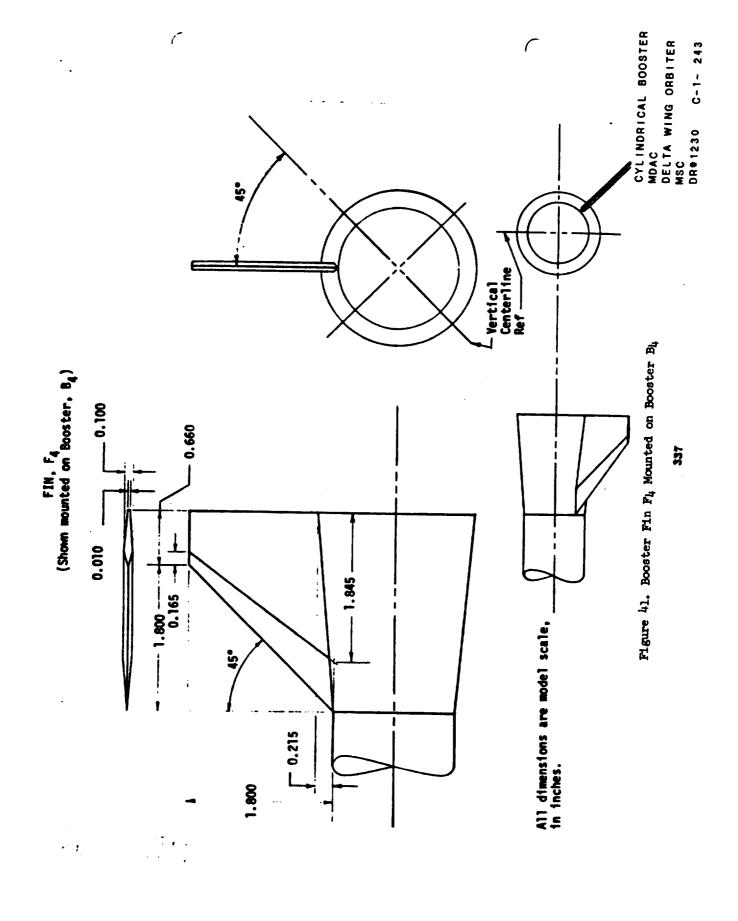
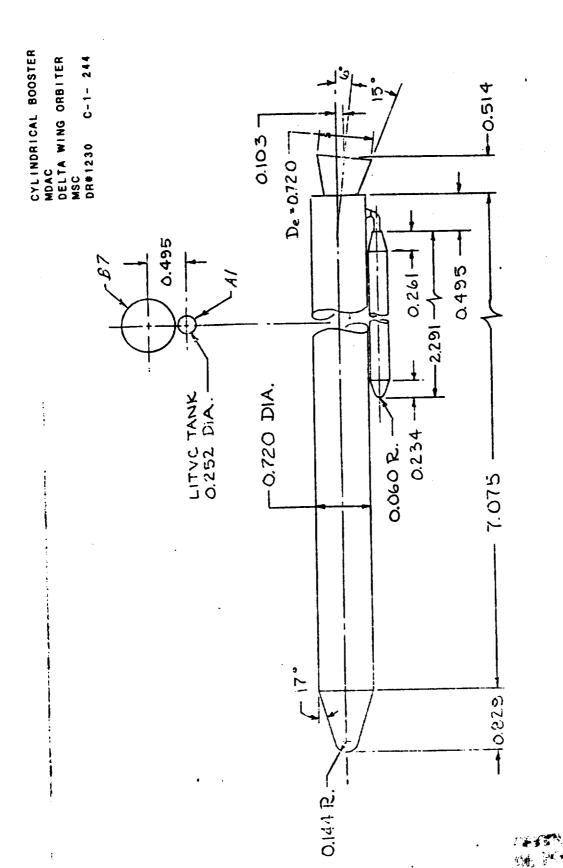


Figure 40. Booster, B4





0.6% SCALE MODEL 120 INCH, 7 SEGMENT SEM

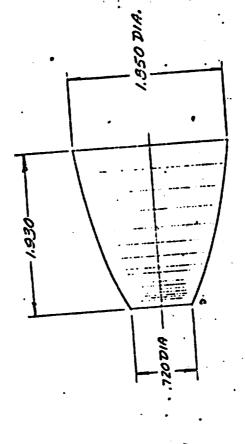
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Figure 42. Booster, ByA1

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CONT. FULL



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Figure 46. Sketch of Plume for Booster Br

CYLINDRICAL BOOSTER MSFC DELTA WING ORBITER LMSC

C-1- 246

DR#1256

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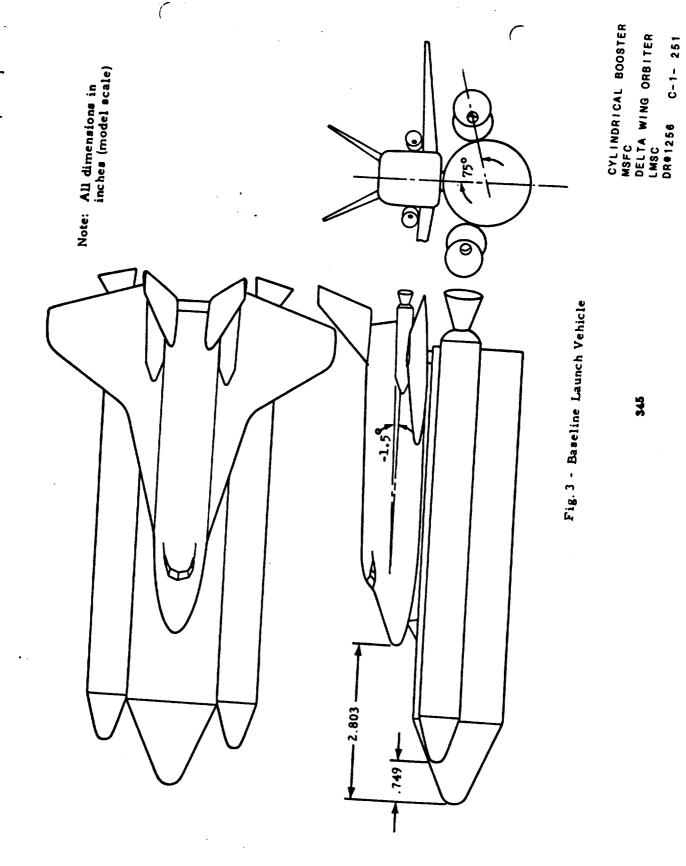
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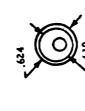
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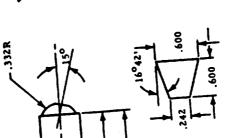


Note: All dimensions in inches (model scale)

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Fig. 4- 156-Inch Solid Rocket Motor with Standard and Skewed Noses and One-Body Diameter Extension

Note: All dimensions in inches (model scale)

Fig. 5 - 178-Inch Solid Rocket Motor

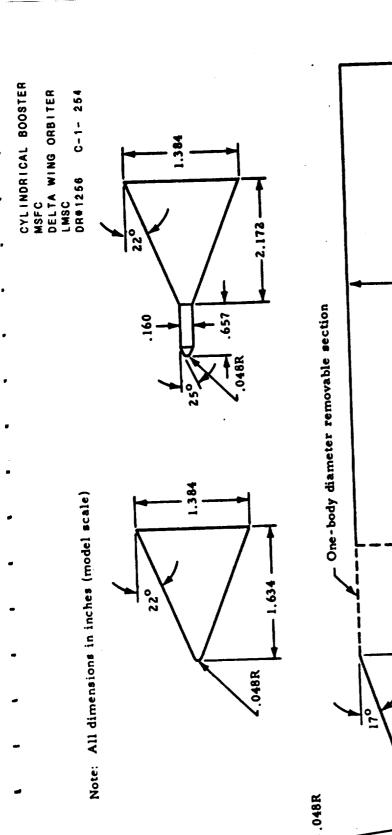


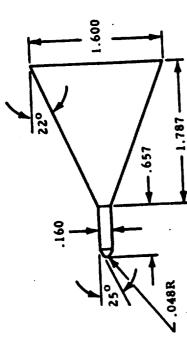
Fig. 6- 346-Inch HO Tank with Three Alternate Noses and One-Body Diameter Extension

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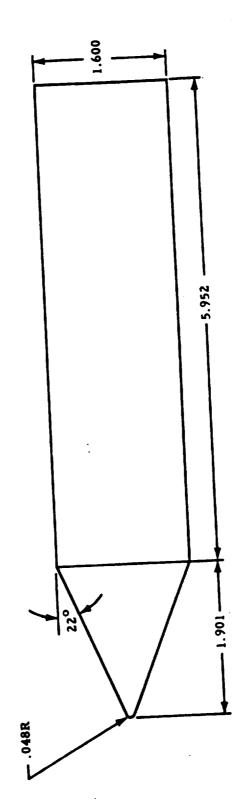


Fig. 7 - 400-Inch HO Tank with Two Alternate Noses

CYLINDRICAL BOOSTER MSFC DELTA WING ORBITER LMSC DR#1256 C-1- 255

Note: All dimensions in inches (model scale)

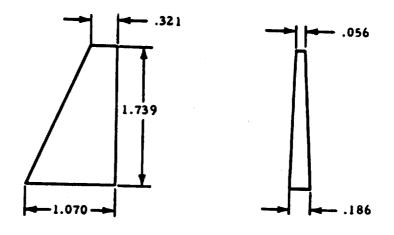




Fig. 8- HO Tank Ventral Fin

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CYLINDRICAL BOOSTER MSFC DELTA WING ORBITER LMSC DR#1272 C-1- 258

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MSPC - Porm 363-3 (February 1973)

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C-1- 259

DR#1272

353

MSPC - Form 365-3 (Potentry 1972)

DATA SET COLLATION SHEET EABLE II (CONTINUED) TEST INIGHA

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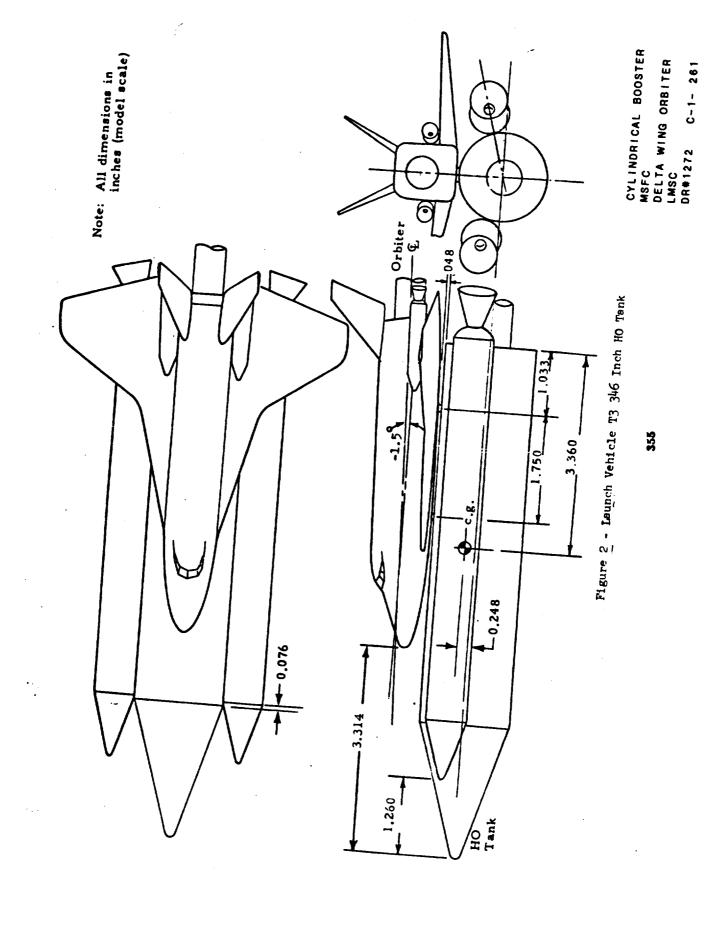
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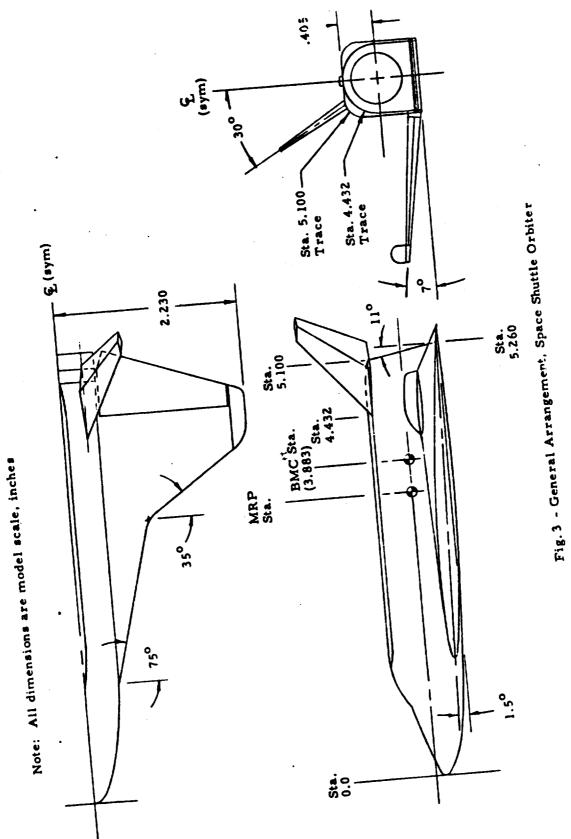
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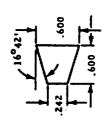




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Note: All dimensions in inches (model scale)



Engine Nozzle

Fig. 4 - Baseline Solid Rocket Motor

CYLINDRICAL BOOSTER MSFC DELTA WING ORBITER LMSC DR#1272 C-1- 264

NOTE: All dimensions in inches (model scale)

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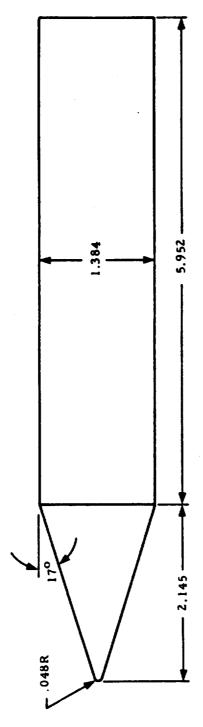


Fig. 5 - 346-Inch Diameter HO Tank with 17-Degree Nosecone



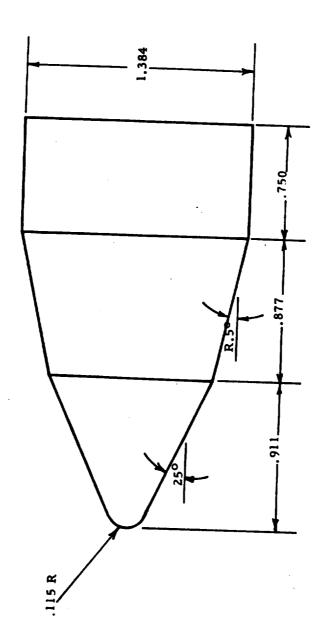


Figure 6 - 78 346 Inch HO Tank Nose Cone

CYLINDRICAL BOOSTER MSFC DELTA WING ORBITER LMSC DR#1272 C-1-265

C-1- 265

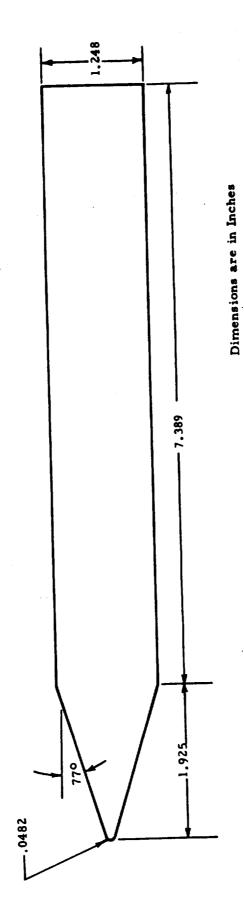


Figure 7 - T9, 346 Inch Diameter HO Tank

All dimensions in inches

Figure 8 - T10 346 Inch HO Tank Nose Conc

CYLINDRICAL BOOSTER MSFC DELTA WING ORBITER LMSC DR#1272 C-1- 267

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CYLINDRICAL BOOSTER MSFC DELTA WING ORBITER MSC DR#1241 C-1- 272 C-1- 272

PIGUE 3 - B, BASELING FUSELAGE

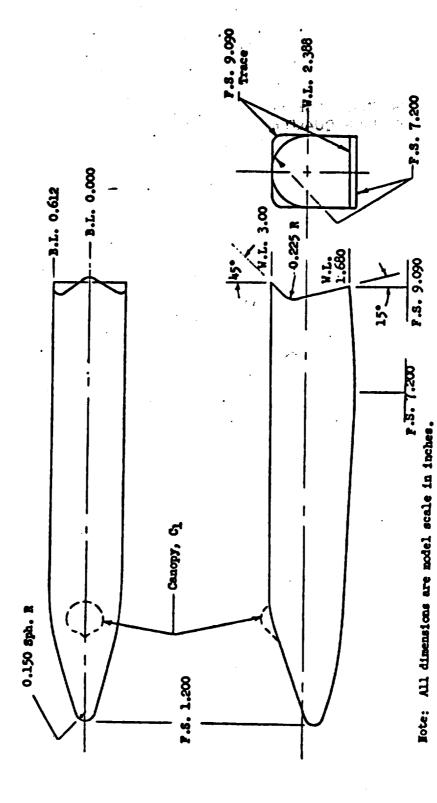
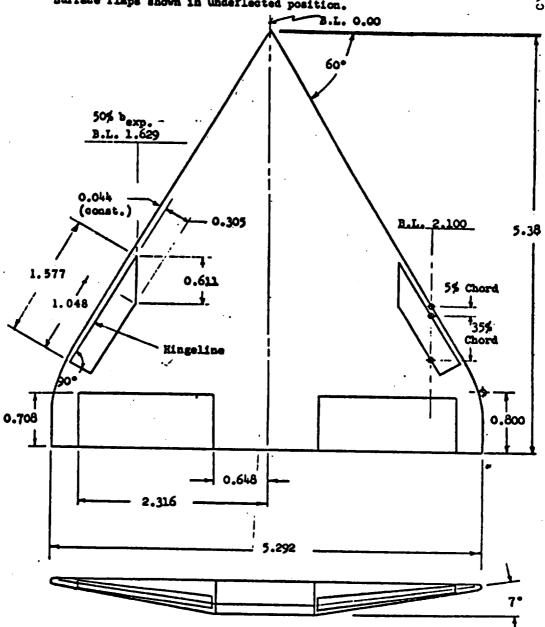
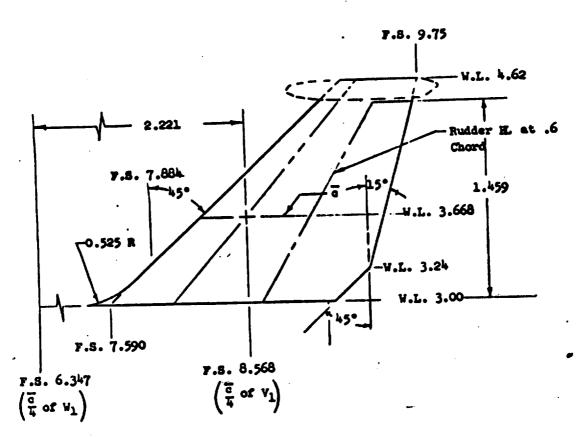


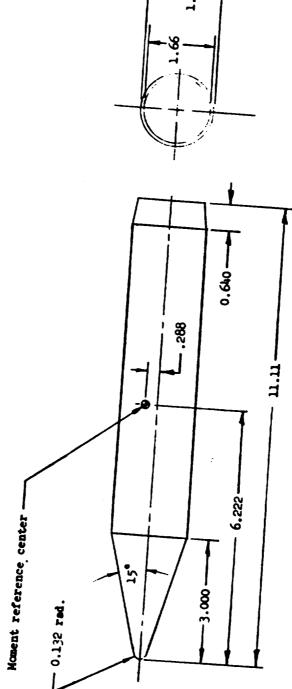
FIGURE 4 - WING, FLAP AND ELEVON - WIN

Notes: All dimensions are model scale in inches. Surface flaps shown in undeflected position.





Hotes: All dimensions are model scale in inches. Vertical tail attached at B.L. 0.00.



All dimensions are model scale, in inches.

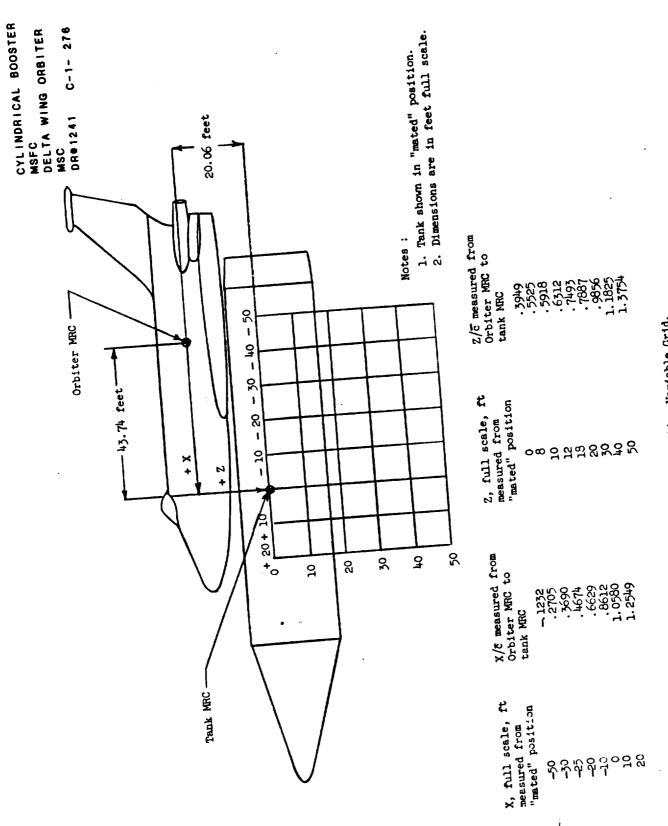
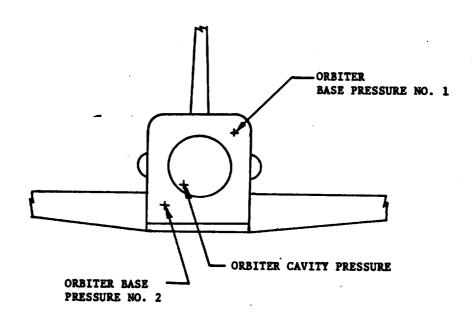


Figure 7 .- Separation Variable Grid.



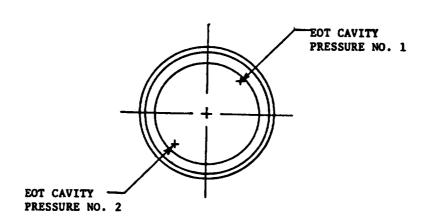


FIGURE 8. BASE AND CAVITY PRESSURE LOCATIONS

DELTA WING ORBITER MSFC

C-1- 278

DR#1249

MSC

TABLE II.

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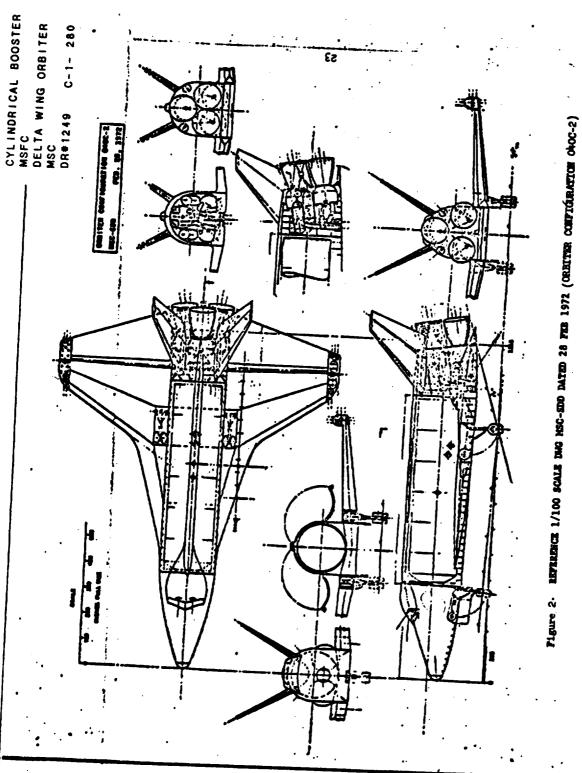
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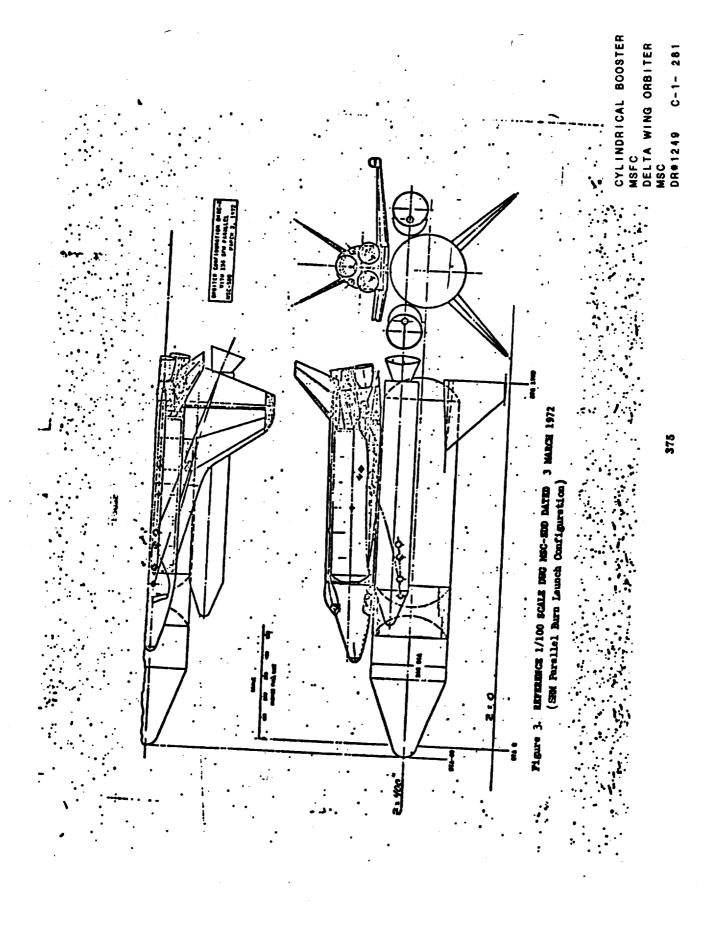
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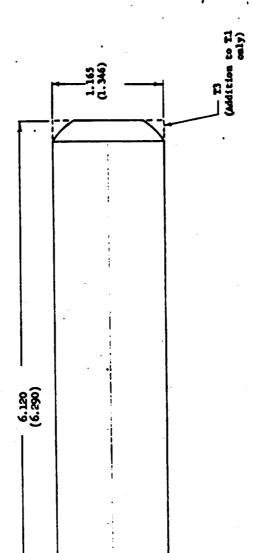
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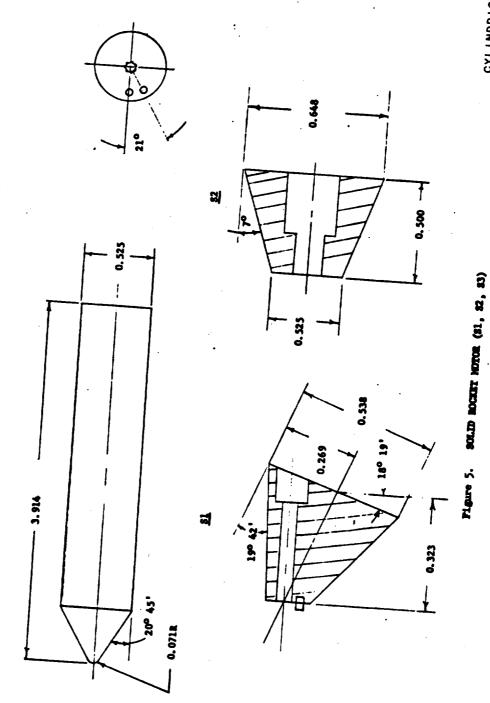
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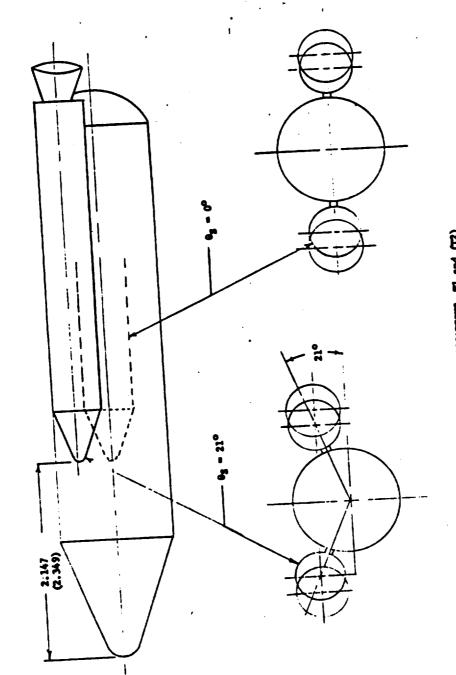


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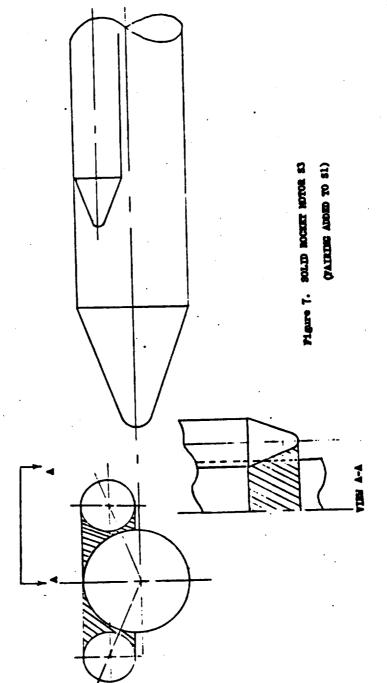
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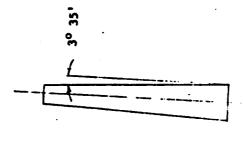
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Pigure 6. SOLID MOCKET HOTOR LOCATIONS TI and (TZ)







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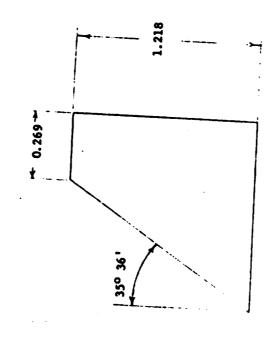
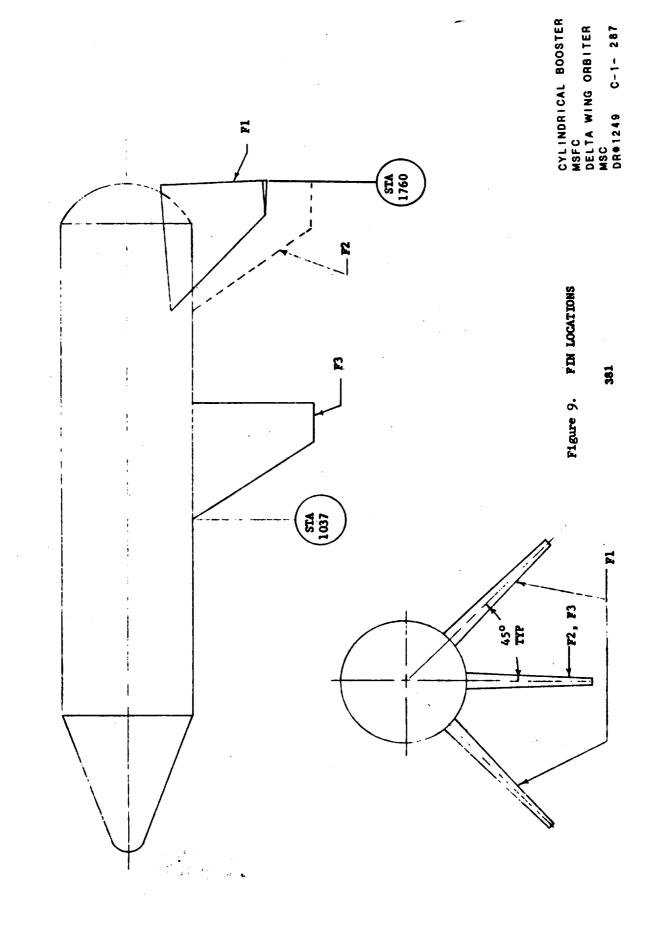
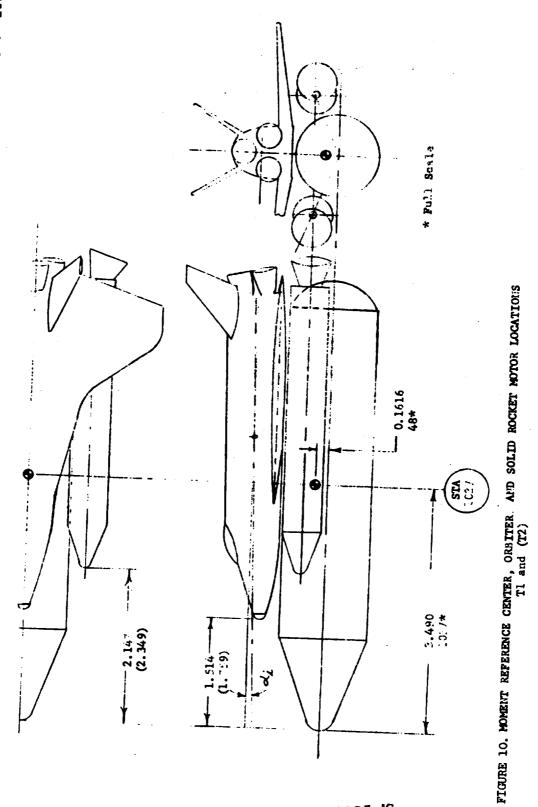




Figure 8. FIN (F1) 2 EACH, (F2) and (F3) 1 EACH





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CYLINDRICAL BOOSTER MSFC DELTA WING ORBITER MSC DR#1251 __C-1-_ 289

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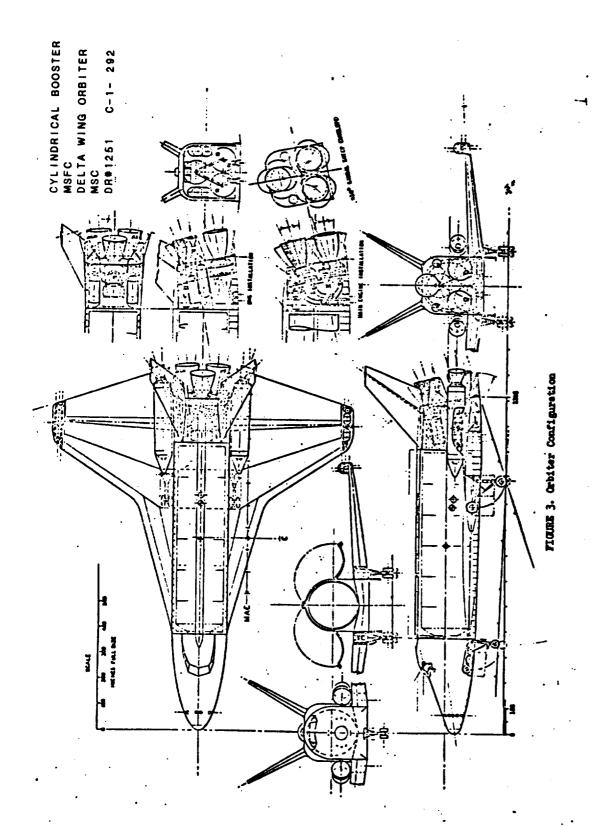
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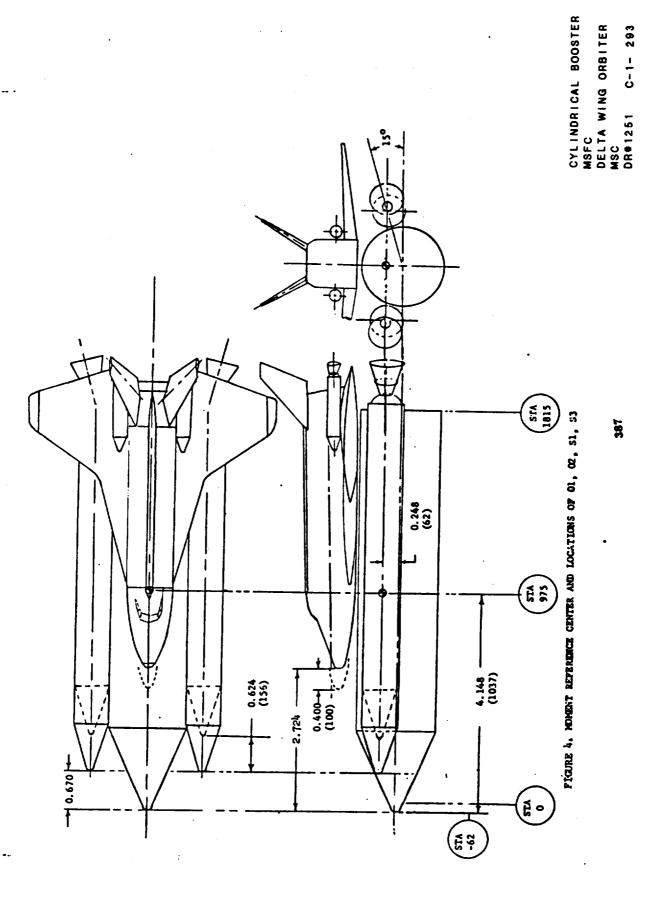
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FIGURE 2. Orbiter Configuration With 156 SRM Perellel



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FIGURE 5. HYDROGEN - OXICEN TANKS II, IZ, and IN

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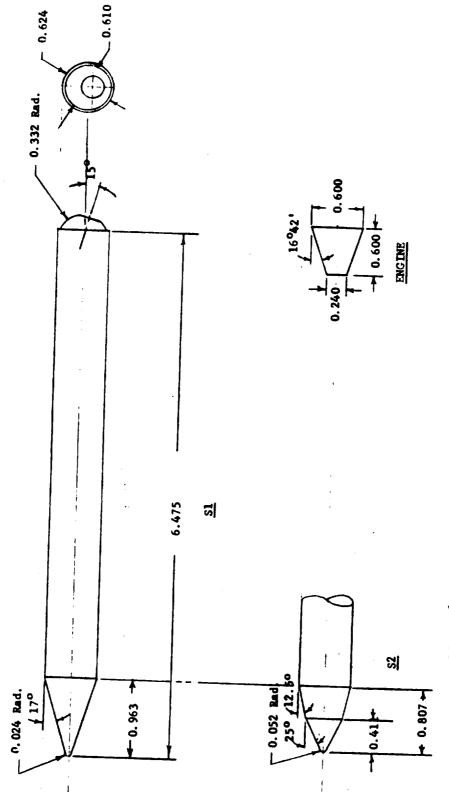


FIGURE 6. SOLID ROCKET HOTORS SI and S2

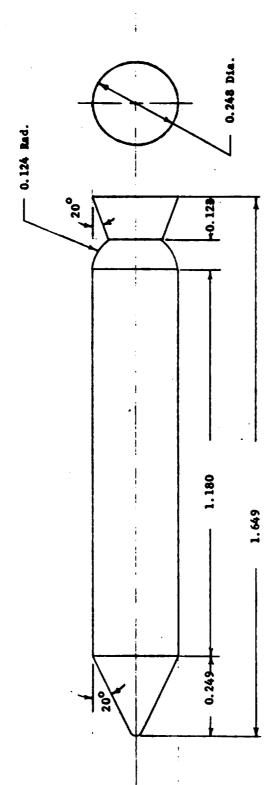


FIGURE 7. ABORT ROCKET MOTOR RI

TEST UPWT 981 DATA SET/RUN NUMBER TABLE II.

COLLATION SUMMARY

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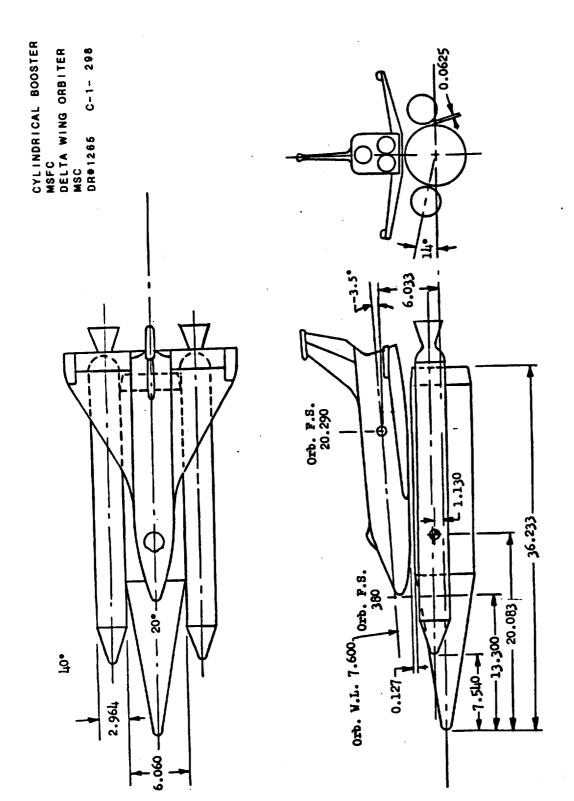


Figure 2. - Complete launch vehicle model, BiClDiMiPlWlTR. Dimensions are in inches.

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Figure 3.- HO tank, T . Dimensions are in inches.

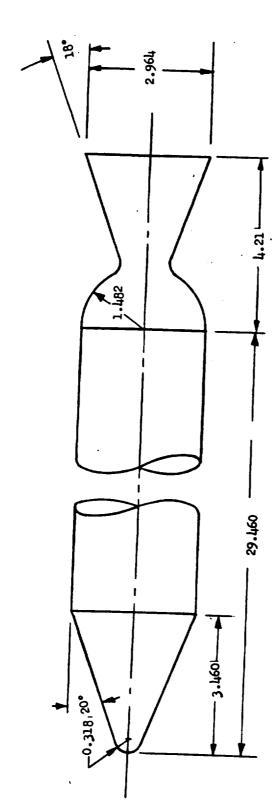


Figure 4. - SRM model, R. Dimensions are in inches.

CYLINDRICAL BOOSTER MSFC DELTA WING ORBITER MSC DR#1267 C-1- 301 TEST RUN NUMBERS |IDPVAR(1)|IDPVAR(2)|NDV O POSTTEST O PRETEST MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 3 61 55 2 = 2 4 64 DATA SET/RUN NUMBER 15 17 18 19 20 13 395 COLLATION SUMMARY TABLE III 4.0 PARAMETERS/VALUES 31 10 0 • Se Sa SR 2 9 x 7-629 TEST 11 - 629 91 0 B ø 0 m 0 Ø 8 0 SCHD. ø ø -5 13 2 0 < CONFIGURATION 0, To S1 COEFFICIENTS: a or B SCHEDULES DATA SET IDENTIFIEB 010 910 017 018 의 함 015 900 800 50 010 110 012 900 000 003 RBC001 005

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CYLINDRICAL BOOSTER DELTA WING ORBITER MSC DR#1267 C-1- 302 TEST RUN NUMBERS O PRETEST O POSTTEST NASA-MSPC-MAP -IDPVAR(1) IDPVAR(2) NDV MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE) 6 . 61 55 21 22 23 DATA SET/RUN NUMBER 5 25 26 27 28 29 30 표 32 33 34 35 36 37 38 39 COLLATION SUMMARY 0.8 1.2 TAME III(Continued) PARAMETERS/VALUES NO. 4.0 4.0 4.0 4.0 .01 2 10 TEST SCHD. 8 0 **@ PQ** æ = 0 0 m 8 0 ø 四 ۷ 5 -5 -5 5 Y 0 4 0 -5 ~ 0 -5 S 2 O1 To S1 + PLUMES CONFIGURATION OI To S1 COEPTICIENTS: a or A Schedules DATA SET IDENTIFIER 021 025 022 023 . 024 027 028 029 031 032 030 033 034 035 036 038 039

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TABLE III Continued)

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C-1- 303

DR#1267

CYLINDRICAL BOOSTER MSFC DELTA WING ORBITER MSC DR#1267 C-1- 304

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COLLATION SUMMARY

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C-1- 305

DR#1267

CYLINDRICAL BOOSTER

DELTA WING ORBITER MSC DR#1267 C-1- 306

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COLLATION SUMMARY

DATA SET/RUN NUMBER

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TABLE III Continued)

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TABLE III (Concluded)

DATA SET/RUN NUMBER

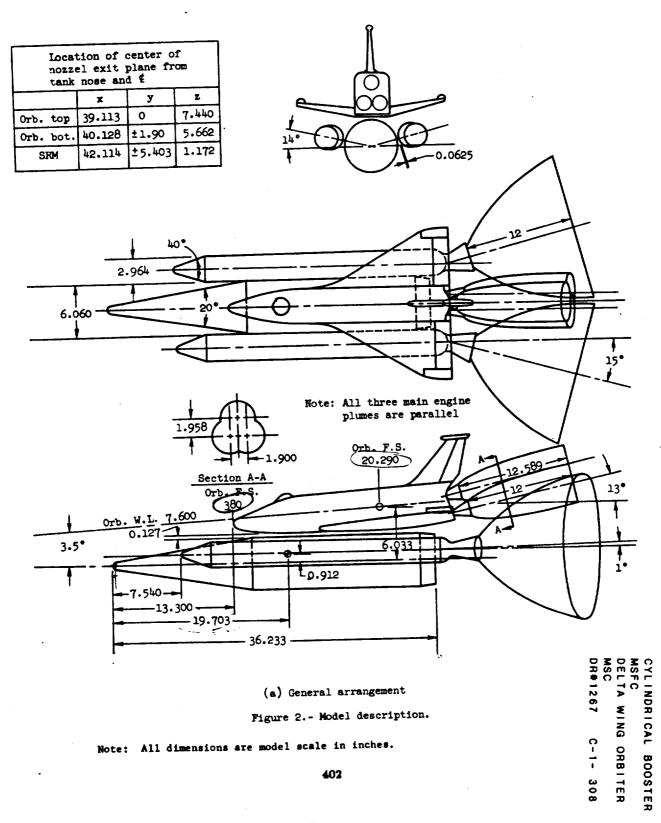
COLLATION SUMMARY

O PRETEST

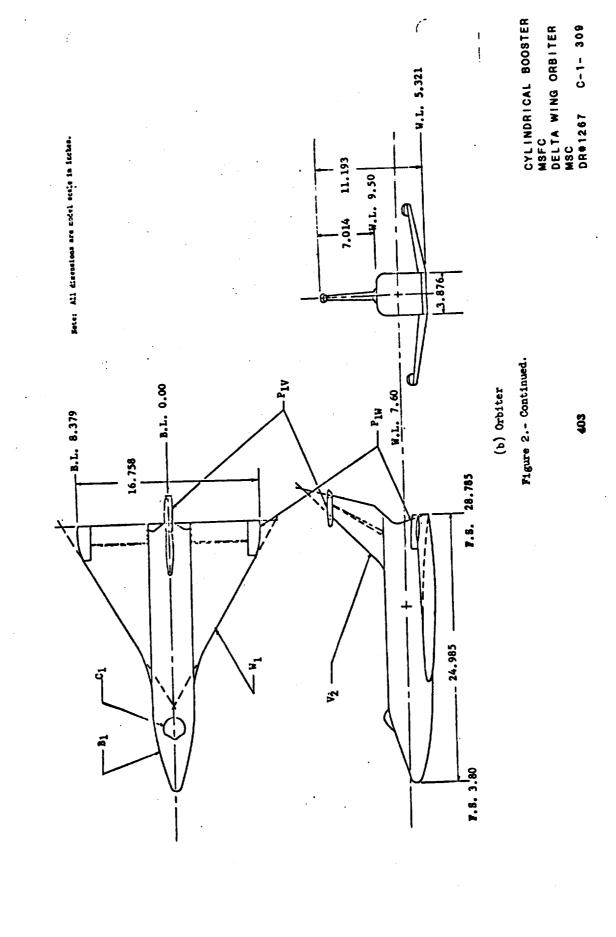
CYLINDRICAL BOOSTER MSFC TEST RUN NUMBERS D POSTTEST - IDPVAR(1) IDPVAR(2) | NDV NO. MACH NUMBERS (OR ALTERNATE INDEPENDENT VARIABLE)
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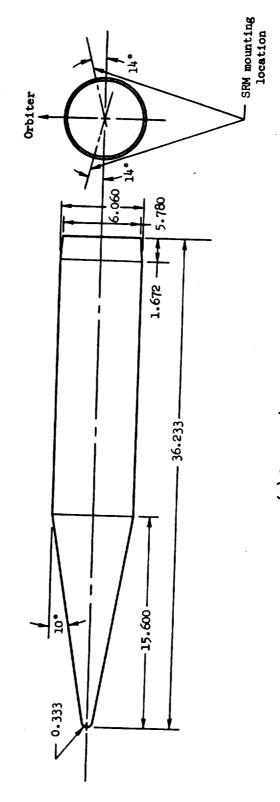
DELTA WING ORBITER MSC DR#1267 C-1- 307



Note: All dimensions are model scale in inches.



Note: All dimensions are model scale in inches.



(1) Hydrogen/Oxygen tank, To

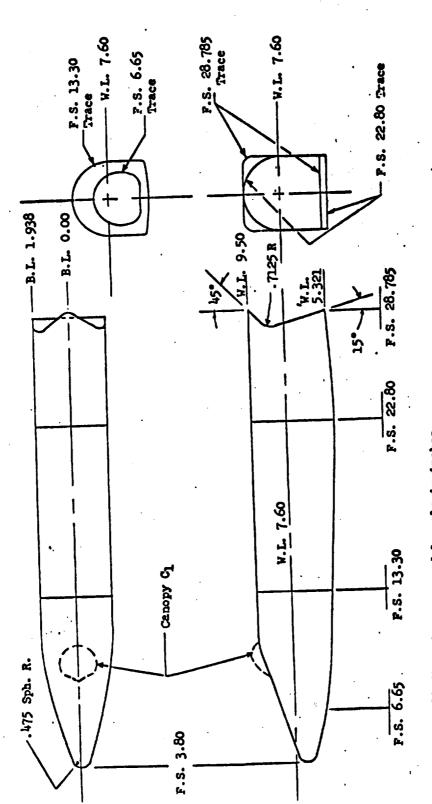
Figure 2. - Continued.

Note: All dimensions are model scale in inches.

√ 0.318

(k) Solid rocket motor, Sı

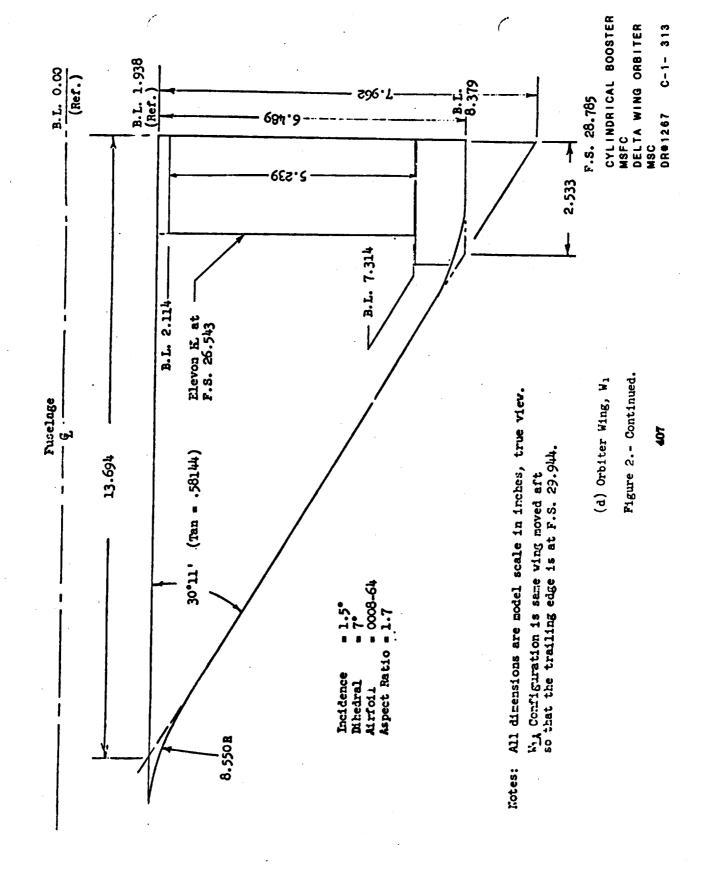
Figure 2.- Continued.



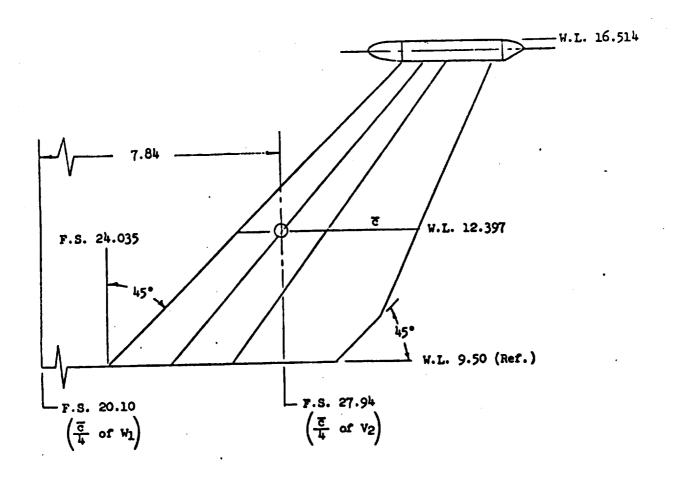
Note: All dimensions are model scale in inches.

(c) Orbiter body, Bı

Figure 2. - Continued.



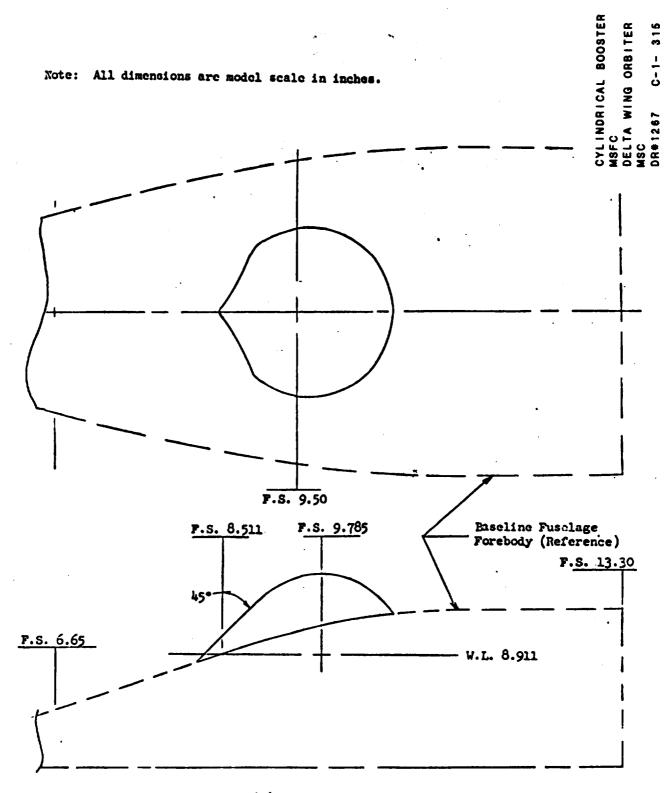
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8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 -	_		C-1	8y = .175 ft.2 CR	•	5.472
#	BOOSTER	176	- 314			



Note: All dimensions are model scale in inches.

(e) Orbiter vertical tail, V₂
Figure 2.- Continued.





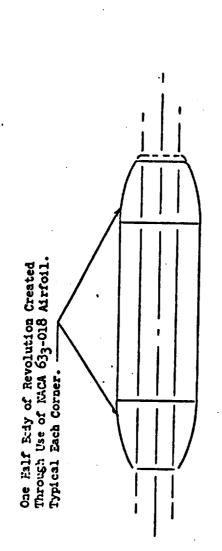
(f) Canopy, C1

Figure 2.- Continued.

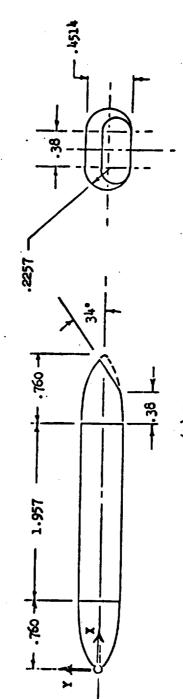
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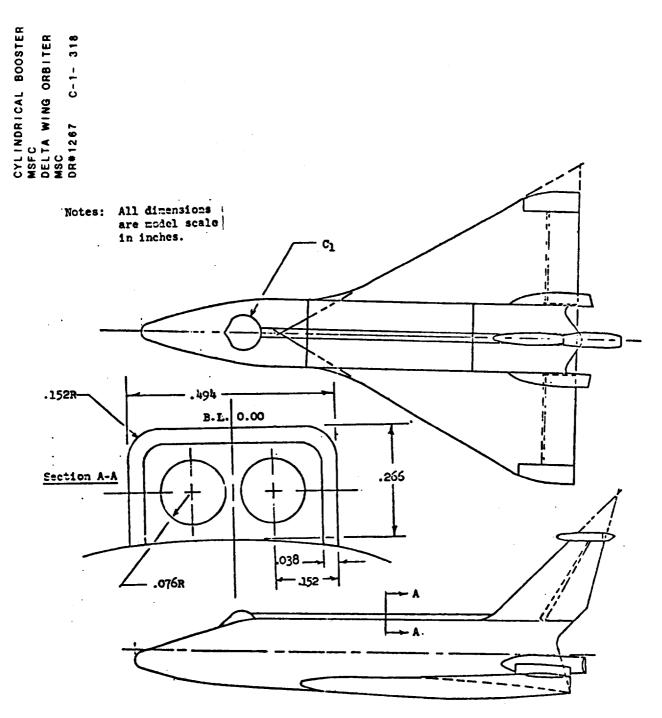
Inches	0 0.0352 0.0430 0.0556 0.0779 0.1331 0.1522 0.2018 0.2257 0.2257	0.0460
Inches	0 0.0109 0.0163 0.0271 0.0543 0.1629 0.2171 0.3257 0.4343 0.5429 0.6514	L.E.Rad.



(h) Vertical tail ACPS pods, Plv

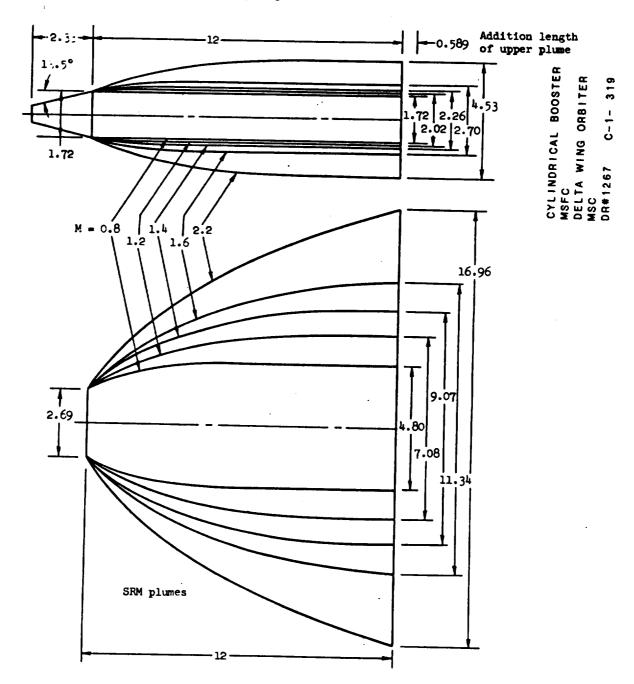
Figure 2. - Continued.

CYLINDRICAL BOOSTER
MSFC
DELTA WING ORBITER
MSC
DR#1267 C-1- 317



(i) Manipulator arm housing, D_1

Figure 2.- Continued.



(1) Rocket plumes

Figure 2.- Concluded.

Note: All dimens! s are model scale in inches.

CYLINDRICAL BOOSTER DELTA WING ORBITER C-1- 320 DR#1185

A POSTTEST O PRETEST

Force - 110C ORIBITED ALONE AND ORBITER + BELLY TANK DATA SET COLLATION SHEET TEST TWT- 509 0.0044 - SCALE OTABLE I.

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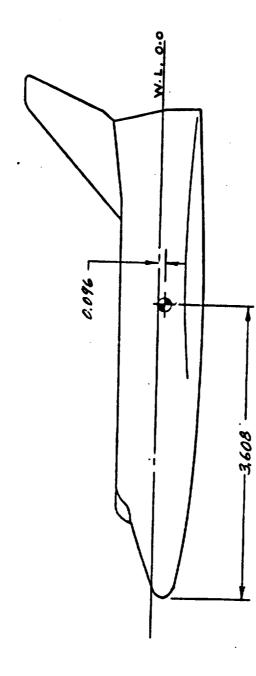


Figure D. LOCATION OF MOMENT REFERENCE POINT $1) \quad \text{Configuration B_{12}}^{\text{W}} 26^{E_{1}} 6^{V} 36$

SSV CONFIG. BIS WEE EIG V36

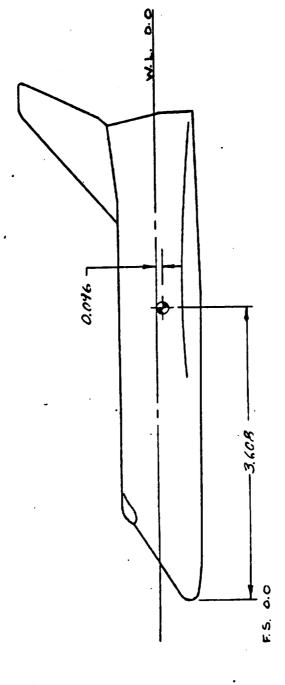
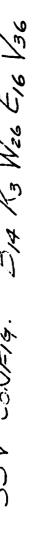


FIGURE D. LOCATION OF MOMENT REFERENCE POINT (Continued) $2) \quad \text{Configuration $B_{13}^{\text{M}}_{26}} E_{16}^{\text{M}}_{36}$



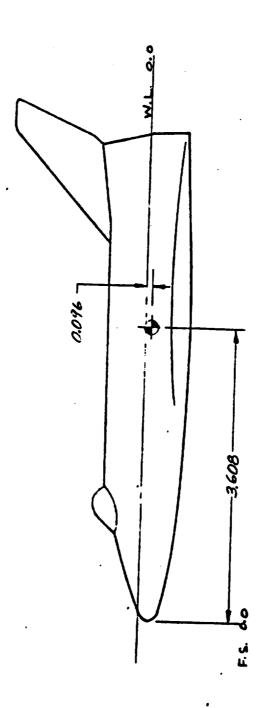


FIGURE D. LOCATION OF MOMENT REFERENCE POINT (Continued) 3) Configuration ${\rm B}_{14}{\rm K}_3{\rm H}_2{\rm e}_{16}{\rm V}_3{\rm e}$

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SSV CONFIG. BIZ WZG E16 V36 + TZ

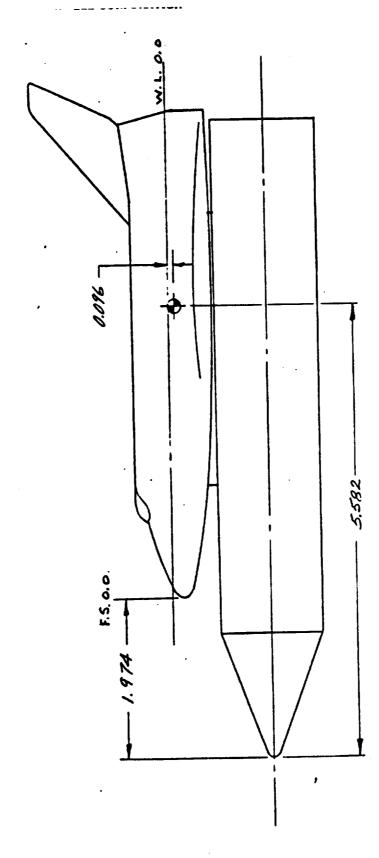


FIGURE D. LOCATION OF MOMENT REFERENCE POINT (Continued) 4) Configuration ${\rm B}_{12}{}^{\rm M}_{26}{\rm E}_{16}{}^{\rm V}_{36}{}^{+\rm T}_{2}$

FIGURE E. BODY - B12

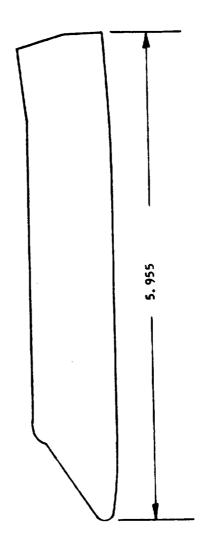


FIGURE F. BODY - B13

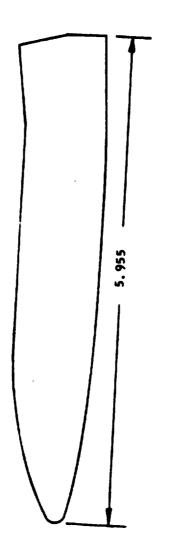


FIGURE G. BODY - B14

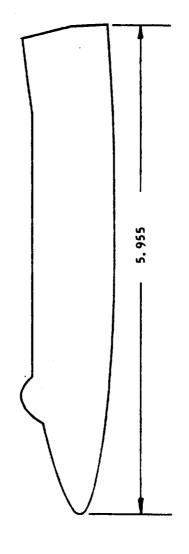


FIGURE H. BODY - B14 + K3

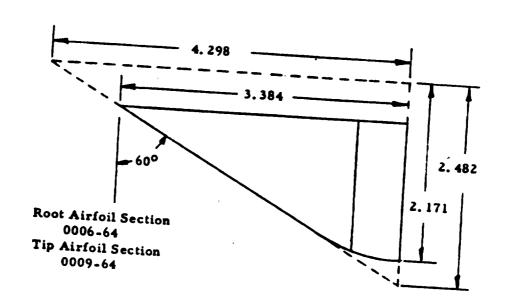


FIGURE I. WING - W26

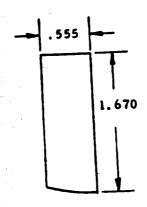


FIGURE J. ELEVON - E16

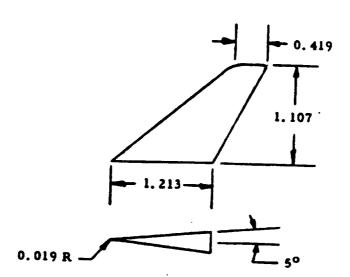


FIGURE K. VERTICAL TAIL - V36

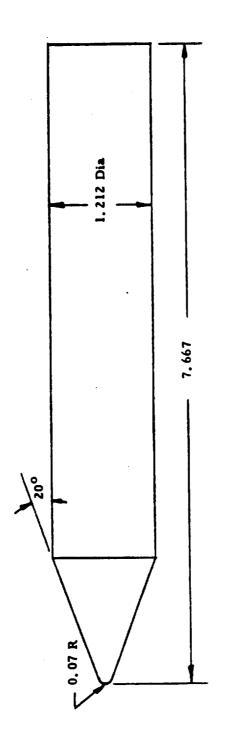


FIGURE L. TANK - T2

12

CYLINDRICAL BOOSTER TBC DELTA WING ORBITER MSC DR#1227 C-1- 333

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TABLE 1

TEST TWT #522 DATA SET COLLATION SHEET

CYLINDRICAL BOOSTER DELTA WING ORBITER MSC C-1- 334 DR#1227 TABLE 1 (Continued)

TEST TWEET DATA SET COLLATION SHEET

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> aragana para ba ALLEND RAM

S = 5.1478 sq.in. (3155.3 sq.ft.) tLONG = 4.426 in. (109.58 ft) blAT = 2.969 in. (73.5 ft)

FIGURE 2 - PRESSARE FED BOOSTER/040A ORBITER 0.003366 SCALE AX 1233 MODE.

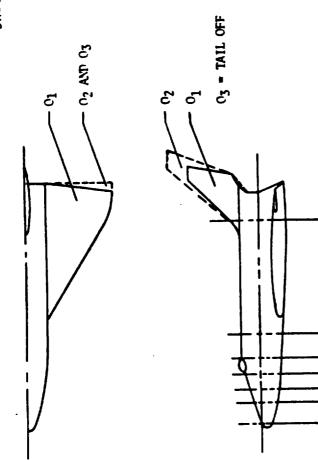
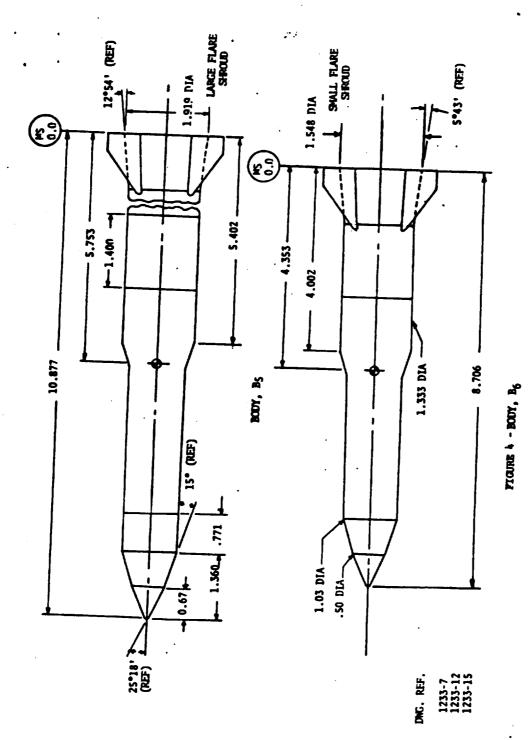
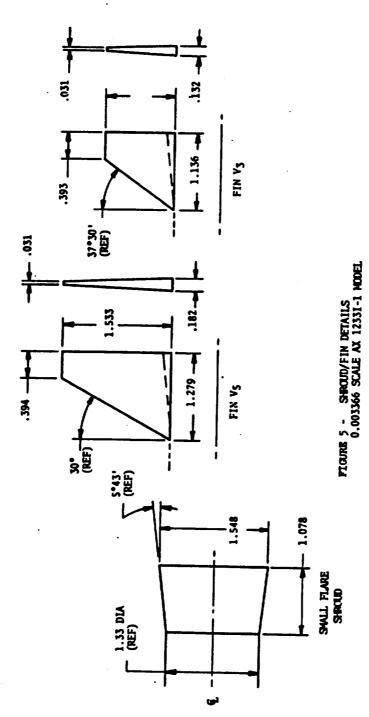
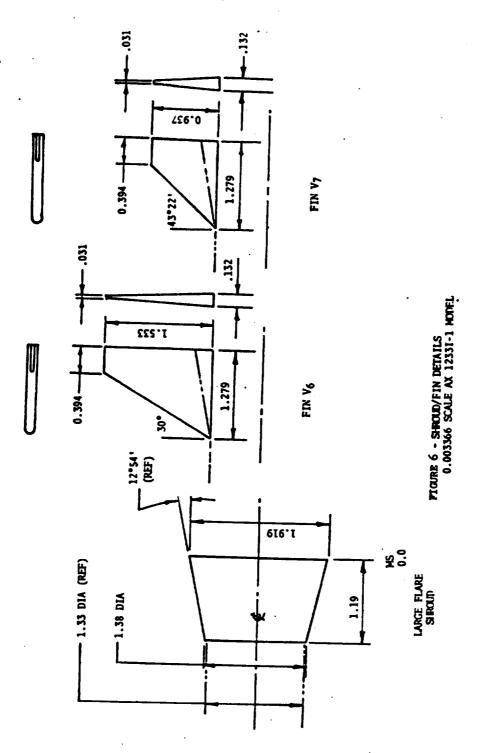


FIGURE 3 - NSC-040A ORBITEP 0.003366 Scale Model



13





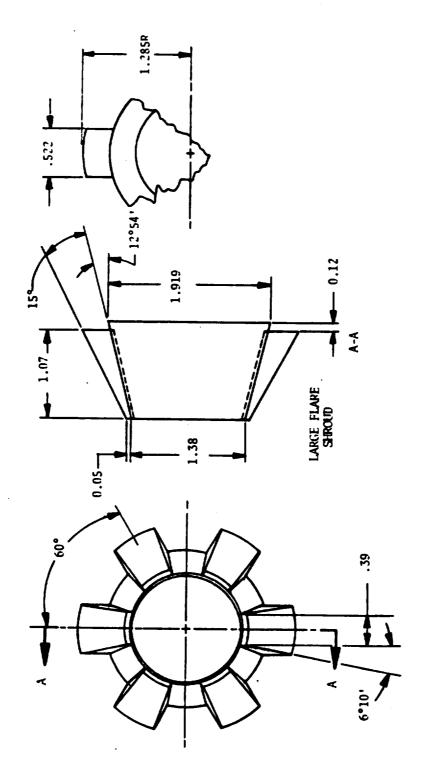
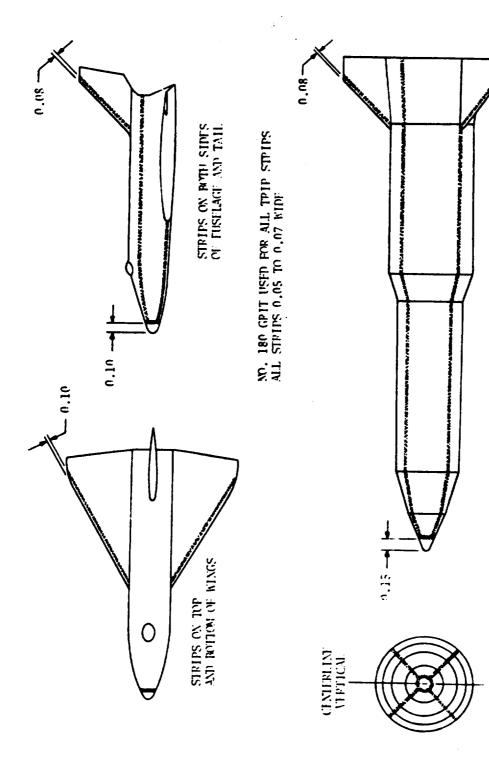


FIGURE 7 - PETAL DETAILS
0.003366 SCALE AX 12331-1 MODEL



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FIGURE 8 - TWIP STRIP CHAPT 0.005366 SCALF WOOFL AN 12551-1

CYLINDRICAL BOOSTER TBC DELTA WING ORBITER MSC DR#1227 C-1-341

CONTROL TORRER

HASA-MSFC-MAF

3

CYLINDRICAL BOOSTER
MSFC
UNIQUE CONFIGS. ORBITER
GAC
DR#1181 C-1- 342

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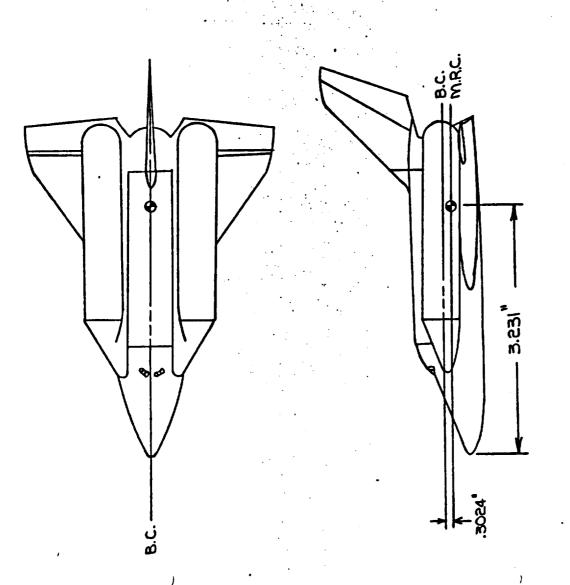


Figure 5. Side and Planview Sketch of the Grumman H-33 Orbiter With Drop Tanks Installed

CYLINDRICAL BOOSTER
MSFC
UNIQUE CONFIGS. ORBITER
GAC
DR#1181 C-1-343

CYLINDRICAL BOOSTER
MSFC
UNIQUE CONFIGS. ORBITER
GAC
DR#1181 C-1- 344

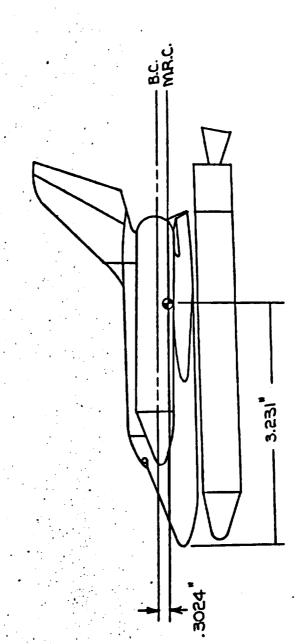


Figure 6. Side and Planview Sketch of the Grumman H-33 Orbiter With Drop Tanks and Three Solid Propellant Booster Motors Installed

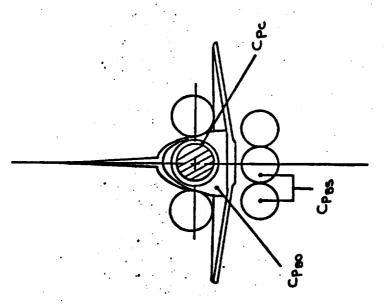


Figure 7. Base Pressure Measurements

Standard Bibliographic Page

1. Report No. NASA CR-178416, Part 1	2. Government	Accession No.	3. Recipient's Cat	talog No.						
4. Title and Subtitle SPACE SHUTTLE PHASE B WIND TUNNEL TEST INFORMATION, VOLUME 3 - LAUR	RATION	5. Report Date July 1988 6. Performing Organization Code								
7. Author(s) J. L. Glynn and D. E. Poucher	8. Performing Organization Report No. DMS-DB-02, Vol. 3									
9. Performing Organization Name and Address Chrysler Corporation Military-Pul Michoud Engineering Office P.O. Box 29200	onic Systems	506-40-11-08 11. Contract or Grant No. NAS1-18276								
New Orleans, Louisiana 70189 12. Sponsoring Agency Name and Address National Aeronautics and Space A	.on	13. Type of Report and Period Covered Contractor Report								
Langley Research Center Hampton, VA 23665-5225 15. Supplementary Notes			14. Sponsoring A	ELLY COLL						
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booster or other aite as reusable orbiter (Phase B) of the Space data was acquired by centers for an exten array of wing and bod All contractor and NA Phase B development h are available for recoverable booster a The Space Shuttle Pha	Archived wind tunker test data are available for typack booster or other alternate recoverable configurations as well as reusable orbiters studied during initial development (Phase B) of the Space Shuttle. Considerable wind tunnel data was acquired by the competing contractors and the NASA centers for an extensive variety of configurations with an array of wing and body planforms. All contractor and NASA wind tunnel test data acquired in the Phase B development have been compiled into a database and are available for applying to current winged flyback or recoverable booster serodynamic studies.									
canard, cylindrical,	Booster configuration types include straight and delta wings, canard, cylindrical, retro-glide and twin body.									
Orbiter configuration types include straight and delta wings, lifting body, drop tanks and double delta wings. Launch configuration types include booster and orbiter components in various stacked and tandum combinations.										
17. Key Words (Suggested by Authors(s)) Space Shuttle Phase B Wind Tunnel Tests Digital Database Aerodynamics Recoverable Booster	18	Distribution Statem Unclassified	- Unlimited Subject Cate	egory 02						
19. Security Classif.(of this report) Unclassified	20. Security Cl Unclas	assif.(of this page) ssified	21. No. of Pages	A19						

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